MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Decide whether the given number is a solution to the equation preceding it.

1) $p + 11 = 25;\ \ 14$

A) Yes B) No

Answer: A

2) $p - 3 = 4;\ \ 7$

A) Yes B) No

Answer: A

3) $9m + 8 = 46;\ \ 4$

A) No B) Yes

Answer: A

4) $6y + 9(y - 6) = 81;\ \ 9$

A) No B) Yes

Answer: B

5) $7p + 5p - 4 = 32;\ \ 3$

A) No B) Yes

Answer: B

6) $(x - 5)^2 = 81;\ 4$

A) Yes B) No

Answer: B

7) $\sqrt{4x + 6} = 4;\ \frac{5}{2}$

A) No B) Yes

Answer: B

8) $\frac{-9}{x} + \frac{1}{-8} = 1;\ \ -8$

A) Yes B) No

Answer: A

Solve the equation.

9) $4z + 12 = 3z + 4$

A) {16} B) {-16} C) {-8} D) {8}

Answer: C

10) $9x - 8x = 17$

A) {-17} B) {17} C) {0} D) $\left\{-\frac{1}{17}\right\}$

Answer: B

11) $10y = 3y + 8 + 6y$

A) {8} B) {80} C) {-8} D) {-80}

Answer: A

12) $-5a + 5 + 6a = 14 - 21$

A) {40} B) {-40} C) {12} D) {-12}

Answer: D

13) $13(8c - 2) = 4c - 2$

A) $\left\{\frac{28}{25}\right\}$ B) $\left\{-\frac{6}{25}\right\}$ C) $\left\{\frac{1}{18}\right\}$ D) $\left\{\frac{6}{25}\right\}$

Answer: D

14) $3(y + 3) = 4(y - 8)$

A) {23} B) {41} C) {-23} D) {-41}

Answer: B

15) $4(2z - 2) = 7(z + 4)$

A) {36} B) {24} C) {-20} D) {20}

Answer: A

16) $-5x + 7(2x - 2) = -1 - 4x$

A) {-1} B) $\left\{-\frac{15}{13}\right\}$ C) {1} D) {- 3}

Answer: C

17) $\frac{x}{3} - 5 = \frac{x}{5} + 1$

A) $\left\{-\frac{15}{2}\right\}$ B) {45} C) {- 6} D) {9}

Answer: B

18) $\frac{5}{2}x - \frac{1}{4} = \frac{x}{4} - \frac{1}{8}$

A) $\left\{\frac{5}{12}\right\}$ B) $\left\{\frac{1}{22}\right\}$ C) {- 12} D) $\left\{\frac{1}{18}\right\}$

Answer: D

Solve the equation. Identify the equation as an identity, an inconsistent equation, or a conditional equation.

19) $16m + 4 = 2(5m + 29)$

A) Conditional, {-10} B) Identity, {all real numbers}
C) Inconsistent, ∅ D) Conditional, {9}

Answer: D

20) $3(8t + 10) = 6(2t + 3)$

A) Identity, {all real numbers} B) Conditional, {-1}
C) Inconsistent, ∅ D) Conditional, {-4}

Answer: B

21) $4(4f - 18) = 16f - 72$

A) Conditional, {1} B) Inconsistent, ∅
C) Conditional, {all real numbers} D) Identity, {all real numbers}

Answer: D

22) $2(4g - 8) - 8g + 16 = 0$

A) Conditional, {1}
B) Inconsistent, ∅
C) Identity, {all real numbers}
D) Conditional, {all real numbers}

Answer: C

23) $20k + 71 = 4(5k + 17)$

A) Inconsistent, {all real numbers}
B) Conditional, ∅
C) Identity, {all real numbers}
D) Inconsistent, ∅

Answer: D

24) $-25s - 45 + 5(5s + 10) = 0$

A) Inconsistent, {all real numbers}
B) Identity, {all real numbers}
C) Inconsistent, ∅
D) Conditional, ∅

Answer: C

25) $7x + 10x = -9x$

A) Conditional, {26}
B) Identity, {all real numbers}
C) Inconsistent, ∅
D) Conditional, {0}

Answer: D

26) $\frac{-8x}{x} = -8$

A) Conditional, {-8}
B) Identity, $\{x|x \neq 0\}$
C) Identity, {all real numbers}
D) Inconsistent, ∅

Answer: B

27) $\frac{x(x + 8)}{x + 8} = x$

A) Conditional, {8}
B) Identity, $\{x|x \neq -8\}$
C) Inconsistent, ∅
D) Identity, {all real numbers}

Answer: B

28) $\frac{2}{m - 4} - \frac{9}{m + 4} = \frac{9}{m^2 - 16}$

A) Inconsistent, ∅
B) Identity, {all real numbers}
C) Conditional, {5}
D) Conditional, {-5}

Answer: C

29) $\frac{2y + 3}{y} = \frac{3}{2}$

A) Conditional, {-6}
B) Identity, $\{x|\ x \neq 0\}$
C) Inconsistent, ∅
D) Conditional, $\{\sqrt{2}\}$

Answer: A

30) $1 - \frac{3}{2x} = \frac{7}{4}$

A) Conditional, $\{-2\}$

B) Identity, $\left\{x \middle| x \neq -\frac{1}{2}\right\}$

C) Inconsistent, $\emptyset$

D) Conditional, $\{2\}$

Answer: A

31) $\frac{5 - a}{a} + \frac{3}{4} = \frac{7}{a}$

A) Conditional, $\{-8\}$

B) Identity, {all real numbers}

C) Conditional, $\left\{\sqrt{\frac{29}{20}}\right\}$

D) Inconsistent, $\emptyset$

Answer: A

32) $\frac{x}{2x + 2} = \frac{-2x}{4x + 4} + \frac{2x - 3}{x + 1}$

A) Identity, $\{x| x \neq -1\}$

B) Conditional, $\{3\}$

C) Inconsistent, $\emptyset$

D) Conditional, $\left\{\frac{3}{2}\right\}$

Answer: B

33) $\frac{x + 3}{8} - \frac{x - 3}{2} = 3$

A) Inconsistent, $\emptyset$

B) Conditional, $\{0\}$

C) Conditional, $\{-3\}$

D) Identity, {all real numbers}

Answer: C

34) $\frac{1}{6} + \frac{6}{x} = \frac{1}{7} + \frac{7}{x}$

A) Conditional, $\left\{\frac{1}{42}\right\}$

B) Inconsistent, $\emptyset$

C) Identity, {all real numbers}

D) Conditional, $\{42\}$

Answer: D

35) $\frac{1}{t} + \frac{1}{5t} + \frac{1}{7t} = 9$

A) Identity, $\{t| t \neq 0\}$

B) Conditional, $\left\{\frac{47}{315}\right\}$

C) Conditional, $\left\{\frac{43}{315}\right\}$

D) Inconsistent, $\emptyset$

Answer: B

36) $\frac{5x}{x - 5} - \frac{4}{x} = \frac{20}{x^2 - 5x}$

A) Conditional, $\left\{\frac{4}{5}\right\}$ B) Conditional, $\left\{\pm\frac{4}{5}\right\}$

C) Inconsistent, $\varnothing$ D) Identity, {all real numbers}

Answer: A

37) $\frac{1}{x + 6} + \frac{4}{x + 5} = \frac{-1}{x^2 + 11x + 30}$

A) Identity, {all real numbers} B) Inconsistent, $\varnothing$

C) Conditional, {5} D) Conditional, {-6}

Answer: B

Use a calculator to help solve the equation. Round approximate answers to three places.

38) $x + 285.992 = 226.288$

A) {0.791} B) {1.264} C) {-59.704} D) {512.28}

Answer: C

39) $-251.031 = 621.153 + x$

A) {-2.474} B) {-872.184} C) {-0.404} D) {370.122}

Answer: B

40) $-355.825x = -478.128$

A) {1.344} B) {170,129.896} C) {-122.303} D) {0.744}

Answer: A

41) $\frac{x}{233.998} = -750.29$

A) {-0.312} B) {-175,566.36} C) {-3.206} D) {-516.292}

Answer: B

42) $(x + 1.4)^2 = (x - 4.5)^2$

A) $\varnothing$ B) {-1.550} C) {1.550} D) {2.950}

Answer: C

43) $(1.84 \times 10^4)x + 6.4 \times 10^3 = 7.6 \times 10^2$

A) {-0.307} B) {-0.378} C) {0.389} D) {0.378}

Answer: A

44) $-2.7q + 1.4 = -12.1 - 1.2q$

A) {5.000} B) {-15} C) {9} D) {5.444}

Answer: C

45) $2x + \frac{2}{5} = \frac{x - 10}{3}$

A) {-1.94} B) {-1.04} C) {-2.64} D) {-2.24}

Answer: D

46) $\pi - 2.7x = 5(x - \sqrt{3}) + 5$

A) {1.183} B) {-0.317} C) {0.883} D) {0.083}

Answer: C

Solve the absolute value equation.

47) $|x| = 4$

A) {4, -4} B) {16} C) {4} D) {-4}

Answer: A

48) $|x| = -11.2$

A) {12,544} B) {11.2} C) $\emptyset$ D) {-11.2}

Answer: C

49) $|b - 4| = 4$

A) {8} B) {-8, 0} C) $\emptyset$ D) {8, 0}

Answer: D

50) $|6m + 8| = 9$

A) $\emptyset$ B) $\left\{\frac{1}{8}, -\frac{17}{8}\right\}$ C) $\left\{-\frac{1}{6}, \frac{17}{6}\right\}$ D) $\left\{\frac{1}{6}, -\frac{17}{6}\right\}$

Answer: D

51) $|t + 5| = 0$

A) {5} B) $(-\infty, 5] \cup [-5, \infty)$ C) $\emptyset$ D) {-5}

Answer: D

52) $|4x| = 0$

A) {0, 4} B) {0} C) {-4, 4} D) {-4, 0}

Answer: B

53) $|8x| = 5$

A) $\left\{-\frac{5}{8}\right\}$ B) $\left\{-\frac{8}{5}, \frac{8}{5}\right\}$ C) $\left\{-\frac{5}{8}, \frac{5}{8}\right\}$ D) $\left\{\frac{5}{8}\right\}$

Answer: C

54) $|x + 5| - 4 = 13$

A) {-12, 12} B) {-4, 12} C) {-22, 12} D) {14, 12}

Answer: C

55) $\frac{1}{5}|x - 12| = 14$

A) {82} B) {82, -58} C) {-58} D) {58, -82}

Answer: B

56) $4|x + 8| - 2 = 0$

A) $\left\{-\frac{15}{2}\right\}$ B) $\left\{-\frac{15}{2}, -\frac{17}{2}\right\}$ C) $\left\{-\frac{17}{2}\right\}$ D) $\left\{-\frac{15}{2}, \frac{17}{2}\right\}$

Answer: B

Solve the equation.

57) $\frac{p}{3} - \frac{3p}{8} = 3$

A) {72} B) {-72} C) {-69} D) {69}

Answer: B

58) $-3.8q + 1.2 = -25.8 - 1.1q$

A) {7.4} B) {10} C) {-30} D) {7.1}

Answer: B

59) $2(x + 2) = 2 - 4(x + 2)$

A) $\left\{\frac{5}{3}\right\}$ B) {10} C) $\left\{\frac{1}{6}\right\}$ D) $\left\{-\frac{5}{3}\right\}$

Answer: D

60) $\frac{5}{m + 4} + \frac{6}{m} = \frac{2m + 4}{m^2 + 4m}$

A) $\left\{-\frac{20}{9}, 20\right\}$ B) $\left\{-\frac{20}{9}\right\}$ C) $\left\{\frac{20}{9}\right\}$ D) $\left\{\pm\frac{20}{9}\right\}$

Answer: B

61) $\frac{5 - x}{x} + \frac{3}{4} = \frac{7}{x}$

A) $\left\{\sqrt{\frac{29}{20}}\right\}$ B) {-4} C) {-8} D) {8}

Answer: C

62) $\frac{x}{2x + 2} = \frac{-2x}{4x + 4} + \frac{2x - 3}{x + 1}$

A) {-3} B) {3} C) $\left\{\frac{3}{2}\right\}$ D) $\left\{-\frac{12}{5}\right\}$

Answer: B

63) $\frac{1}{5}(20x - 25) = \frac{1}{2}(10x - 8)$

A) {-1} B) {1} C) {-20} D) $\left\{\frac{1}{20}\right\}$

Answer: A

64) $\frac{9x - 8}{5} + \frac{4x + 1}{2} = 3$

A) $\left\{\frac{7}{19}\right\}$ B) $\left\{\frac{51}{38}\right\}$ C) $\left\{\frac{1}{2}\right\}$ D) $\left\{\frac{41}{38}\right\}$

Answer: D

65) $x^2 + 7x + 2 = x^2 - 6$

A) $\left\{\frac{12}{7}\right\}$ B) Inconsistent, $\emptyset$

C) $\left\{-\frac{8}{7}\right\}$ D) Identity, {all real numbers}

Answer: C

66) $6x^2 + 7x - 1 = x(7 + 6x) - 1$

A) $\left\{\frac{4}{3}\right\}$ B) Identity, {all real numbers}

C) $\left\{-\frac{4}{3}\right\}$ D) Inconsistent, $\emptyset$

Answer: B

Solve the problem.

67) The temperature, t, in degrees Fahrenheit, of water being heated is $67 + \frac{1}{3}m$ where m is the number of minutes since heating began. How long will it take for the temperature of the water to reach 70 degrees Fahrenheit?

A) 9 min B) 3 min C) 6 min D) 18 min

Answer: A

68) Mark has $75 to spend on salmon at $5.00 per pound and/or chicken at $3.00 per pound. If he buys s pounds of salmon and c pounds of chicken, the equation $5s + 3c = 75$ must be satisfied. How much salmon did Mark buy if he bought 5 pounds of chicken?

A) 12 lb B) 16 lb C) 19 lb D) 17 lb

Answer: A

69) Yearly sales at a certain department store follow the model $y = 85 - 13.254x$ where y is the total sales in thousands of dollars and x is the number of years after 1992. In what year will the sales first be less than $35,000?

A) 1996 B) 1995 C) 1990 D) 1989

Answer: B

70) A repair company's charge for repairing a certain type of copy machine fits the model $y = 47.38 + 0.617x$ where y is the number of dollars charged and x is the number of minutes the repair person is on the job. How many minutes would it take for the cost of repair to reach $120? (Round to the nearest minute.)

A) 118 min B) 12 min C) 271 min D) 187 min

Answer: A

71) When going more than 38 miles per hour, the gas mileage of a certain car fits the model $y = 43.81 - 0.395x$ where x is the speed of the car in miles per hour and y is the miles per gallon of gasoline. Based on this model, at what speed will the car average 15 miles per gallon? (Round to nearest whole number.)

A) 98 mph B) 48 mph C) 149 mph D) 73 mph

Answer: D

72) The temperature of water in a certain lake on a day in October can be determined by using the model $y = 15.2 - 0.537x$ where x is the number of feet down from the surface of the lake and y is the Celsius temperature of the water at that depth. Based on this model, how deep in the lake is the water 8 degrees? (Round to the nearest foot.)

A) 32 ft B) 69 ft C) 13 ft D) 43 ft

Answer: C

73) In the following formula, y is the minimum number of hours of studying required to attain a test score of x: $y = \frac{0.35x}{100.5 - x}$. How many hours of study are needed to score 87? Round to the nearest hundredth of an hour.

A) 2.26 hr B) 6.02 hr C) 101.09 hr D) 22.60 hr

Answer: A

74) Suppose a cost-benefit model is given by $y = \frac{4.4x}{100 - x}$, where y is the cost in thousands of dollars for removing x percent of a given pollutant. Find the cost of removing 40% to the nearest dollar.

A) \$666 B) \$1760 C) \$2933 D) \$4400

Answer: C

75) Median family income in Country X between 1990 and 1999 can be modeled by $f(x) = 1174.6(x - 1990) + 35{,}265$, where x is the year. Determine symbolically when the median income was \$42,092.

A) $x \approx 1994$ B) $x \approx 2000$ C) $x \approx 1998$ D) $x \approx 1996$

Answer: D

Solve the formula for the specified variable.

76) $A = \frac{1}{2}bh$ for b

A) $b = \frac{2A}{h}$ B) $b = \frac{Ah}{2}$ C) $b = \frac{A}{2h}$ D) $b = \frac{h}{2A}$

Answer: A

77) $S = 2\pi rh + 2\pi r^2$ for h

A) $h = S - r$ B) $h = 2\pi(S - r)$ C) $h = \frac{S}{2\pi r} - 1$ D) $h = \frac{S - 2\pi r^2}{2\pi r}$

Answer: D

78) $V = \frac{1}{3}Bh$ for B

A) $B = \frac{3V}{h}$ B) $B = \frac{h}{3V}$ C) $B = \frac{V}{3h}$ D) $B = \frac{3h}{V}$

Answer: A

79) $I = \frac{nE}{nr + R}$ for n

A) $n = \frac{-R}{Ir - E}$ B) $n = \frac{IR}{Ir + E}$ C) $n = IR(Ir - E)$ D) $n = \frac{-IR}{Ir - E}$

Answer: D

80) $P = s_1 + s_2 + s_3$ for s_3

A) $s_3 = s_1 + P - s_2$ B) $s_3 = P - s_1 - s_2$ C) $s_3 = s_1 + s_2 - P$ D) $s_3 = P + s_1 + s_2$

Answer: B

81) $F = \frac{9}{5}C + 32$ for C

A) $C = \frac{5}{F - 32}$ B) $C = \frac{F - 32}{9}$ C) $C = \frac{9}{5}(F - 32)$ D) $C = \frac{5}{9}(F - 32)$

Answer: D

82) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1

A) $b_1 = \frac{(b_2)^2 A - h}{h}$ B) $b_1 = \frac{A - h(b_2)}{2h}$ C) $b_1 = \frac{2A - (h)(b_2)}{h}$ D) $b_1 = \frac{h(b_2) - 2A}{h}$

Answer: C

83) $a + b = s + r$ for s

A) $s = \frac{a + b}{s}$ B) $s = \frac{a}{s} + b$ C) $s = r(a + b)$ D) $s = a + b - r$

Answer: D

84) $A = P(1 + nr)$ for r

A) $r = \frac{P - A}{Pn}$ B) $r = \frac{A}{n}$ C) $r = \frac{A - P}{Pn}$ D) $r = \frac{Pn}{A - P}$

Answer: C

85) $R = nE - nr$, for n

A) $n = R + nr - E$ B) $n = \frac{R}{E - r}$ C) $n = R - E + r$ D) $n = \frac{R + nr}{E}$

Answer: B

Use the appropriate formula to solve the problem.

86) The length of a rectangular billboard is 7 inches more than the width. The perimeter of the billboard is 138 inches. Find the width of the billboard.

A) 7 in. B) 38 in. C) 34 in. D) 31 in.

Answer: D

87) The perimeter of a rectangle is 30 cm. One side is 9 cm longer than the other side. Find the lengths of the sides.

A) 6 cm, 15 cm B) 8 cm, 17 cm C) 3 cm, 12 cm D) 3 cm, 9 cm

Answer: C

88) The perimeter of a rectangle is 38 m. If the width were doubled and the length were increased by 5 m, the perimeter would be 60 m. What are the length and width of the rectangle?

A) width 4 m, length 9 m B) width 9 m, length 9 m

C) width 6 m, length 13 m D) width 13 m, length 6 m

Answer: C

89) Using the interest rate formula $A = \frac{2pf}{b(q + 1)}$, find A to the nearest percent when p = 12, f = \$177, b = \$1000, q = 24.

A) 17% B) 18% C) 15% D) 16%

Answer: A

90) Using the interest rate formula $A = \frac{2pf}{b(q + 1)}$, find f to the nearest dollar when A = 11%, p = 12, b = \$2900, q = 12.

A) \$183 B) \$170 C) \$173 D) \$195

Answer: C

91) The area of a trapezoid is 88 square feet. If the bases are 8 and 14 feet, find the height of the trapezoid. $[A = \frac{1}{2}(B + b)h]$

A) 1.5 ft B) 16 ft C) 8 ft D) 4 ft

Answer: C

92) A circle has a circumference of 42π meters. Find the radius of the circle. ($C = 2\pi r = \pi d$)

A) 7 m B) 11 m C) 42 m D) 21 m

Answer: D

93) Find the corresponding Celsius temperature for a temperature of 129°F. Round to the nearest tenth, if necessary.

A) 264.2°C B) 68.1°C C) 174.6°C D) 53.9°C

Answer: D

94) Find the corresponding Fahrenheit temperature for a temperature of 23°C. Round to the nearest tenth, if necessary.

A) -5°F B) 73.4°F C) 99°F D) 30.6°F

Answer: B

95) Levi borrowed \$3859 at 14% simple interest for 4 months. How much will the interest amount to? What is the total amount that Levi will have to pay back at the end of 4 months? Round answers to the nearest cent if necessary.

A) \$135.07; \$3994.07 B) \$180.09; \$4039.09 C) \$225.11; \$4084.11 D) \$181.60; \$4040.60

Answer: B

Solve the problem.

96) If Gloria received a 4% raise and is now making \$23,920 a year, what was her salary before the raise?

A) \$23,000 B) \$24,000 C) \$22,920 D) \$21,920

Answer: A

97) Stevie bought a stereo for \$275 and put it on sale at his store at a 50% markup rate. What was the retail price of the stereo?

A) \$550.00 B) \$412.50 C) \$312.50 D) \$375.00

Answer: B

98) On Monday, an investor bought 100 shares of stock. On Tuesday, the value of the shares went up 6%. How much did the investor pay for the 100 shares if he sold them Wednesday morning for $1378.00?

A) $1350.00 B) $1460.68 C) $1300.00 D) $1328.00

Answer: C

99) Mardi received an inheritance of $60,000. She invested part at 10% and deposited the remainder in tax-free bonds at 8%. Her total annual income from the investments was $5800. Find the amount invested at 10%.

A) $54,200 B) $50,000 C) $25,000 D) $49,000

Answer: B

100) Walt made an extra $9000 last year from a part-time job. He invested part of the money at 9% and the rest at 6%. He made a total of $720 in interest. How much was invested at 6%?

A) $6000 B) $4500 C) $7000 D) $3000

Answer: D

101) At the end of the day, a storekeeper had $1470 in the cash register, including both the sale of goods and the sales tax of 5%. What amount of sales tax had been collected?

A) $70 B) $65 C) $60 D) $75

Answer: A

102) A square plywood platform has a perimeter which is 6 times the length of a side, decreased by 6. Find the length of a side.

A) 5 B) 1 C) 3 D) 2

Answer: C

103) A rectangular Persian carpet has a perimeter of 248 inches. The length of the carpet is 28 inches more than the width. What are the dimensions of the carpet?

A) 76 in., 104 in. B) 96 in., 124 in. C) 48 in., 76 in. D) 110 in., 138 in.

Answer: C

104) A triangular lake-front lot has a perimeter of 1700 feet. One side is 100 feet longer than the shortest side, while the third side is 400 feet longer than the shortest side. Find the lengths of all three sides.

A) 100 ft, 200 ft, 300 ft B) 500 ft, 600 ft, 900 ft C) 500 ft, 500 ft, 500 ft D) 400 ft, 500 ft, 800 ft

Answer: D

105) A bakery owner sells rectangular birthday cakes that are 5 inches longer than they are wide. To increase his profit, he decides to decrease both the length and width by 3 inches. If the area of the new cake is 66 $in.^2$ smaller than the old cake, then what are the length and width of the old cake?

A) length = 16 in. ; width = 8 in. B) length = 17 in. ; width = 11 in.

C) length = 15 in. ; width = 10 in. D) length = 14 in. ; width = 9 in.

Answer: C

106) A circular hole is filled with concrete to make a footing for a load-bearing pier. The hole measures 18 inches across and requires 2.2 bags of concrete in order to fill it to ground level. What is the depth of the hole? Round your answer to the nearest inch. (One bag of concrete, when mixed with the appropriate amount of water, makes 1800 $in.^3$ of material.)

A) 22 in. B) 16 in. C) 20 in. D) 13 in.

Answer: B

107) Jay drove 308 kilometers at the average rate of 77 kilometers per hour. How long did the trip take?

A) 3 hours B) $\frac{1}{4}$ hour C) 5 hours D) 4 hours

Answer: D

108) Janet drove 325 kilometers and the trip took 5 hours. How fast was Janet traveling?

A) $\frac{1}{65}$ kph B) 65 kph C) 1625 kph D) 66 kph

Answer: B

109) Jill is 13.5 kilometers away from Joe. Both begin to walk toward each other at the same time. Jill walks at 1.5 kilometers per hour. They meet in 3 hours. How fast is Joe walking?

A) 9 kilometers per hour B) 6 kilometers per hour
C) 3 kilometers per hour D) 2.25 kilometers per hour

Answer: C

110) From a point on a river, two boats are driven in opposite directions, one at 10 miles per hour and the other at 6 miles per hour. In how many hours will they be 48 miles apart?

A) 8 hours B) 6 hours C) 12 hours D) 3 hours

Answer: D

111) Candy and Delvis are riding bicycles in the same direction. Candy is traveling at the speed of 5 miles per hour and Delvis is traveling at the speed of 7 miles per hour. In 2 hours, what is the distance between them?

A) 120 miles B) 168 miles C) 4 miles D) 24 miles

Answer: C

112) From a point on a straight road, two cars are driven in opposite directions, one at 50 miles per hour and the other at 45 miles per hour. In how many hours will they be 475 miles apart?

A) 6 hours B) 4 hours
C) Not enough information D) 5 hours

Answer: D

113) From a point on a straight road, John and Fred ride bicycles in opposite directions. John rides 10 miles per hour and Fred rides 13 miles per hour. In how many hours will they be 115 miles apart?

A) Not enough information B) 6 hours
C) 4 hours D) 5 hours

Answer: D

114) From a point on a river, two boats are driven in opposite directions, one at 9 miles per hour and the other at 10 miles per hour. In how many hours will they be 57 miles apart?

A) 4 hr B) 1 hr C) 5 hr D) 3 hr

Answer: D

115) Sarah and Shakina are running in a 4-lap, 1 mile race. Shakina is exactly one lap behind at the moment when Sarah completes her second lap. If Sarah averages 0.19 miles per minute for her last two laps, what must Shakina's average speed be in order for her to just pull even with Sarah at the finish line?

A) 0.13 mi/min B) 0.38 mi/min C) 0.25 mi/min D) 0.29 mi/min

Answer: D

116) An airplane flies from Metro City to Gotham with a tailwind that increases its normal speed by 120 mph. On the return trip, the plane must fly against this wind, which decreases its normal speed by the same amount. The flight from Metro City takes 1.70 hours and the return trip takes 3.48 hours. How far is it from Metro City to Gotham?

A) 800 mi B) 920 mi C) 1100 mi D) 1000 mi

Answer: A

117) Helen Weller invested $10,000 in an account that pays 10% simple interest. How much additional money must be invested in an account that pays 13% simple interest so that the average return on the two investments amounts to 11%?

A) $5000 B) $6000 C) $10,000 D) $7000

Answer: A

118) Carl participates in a bowling tournament. After completing $\frac{2}{3}$ of the games, his average score per game is 200. What must his average score be in the remaining games in order for his overall game average to be 223.33? Round your answer to the nearest point.

A) 265 B) 259 C) 270 D) 277

Answer: C

119) A student earned scores of 85, 83, 90, 94, 88, and 84 on the first six tests in a biology class. What score is needed on the seventh test to produce an 86 average?

A) 81 B) 78 C) 80 D) 79

Answer: B

120) Jim had grades of 67 and 88 on two chemistry tests. What is the lowest score he can get on the third test to maintain an average of 75?

A) 70 B) 77.5 C) 75 D) 77

Answer: A

121) In the first two weeks of school, Jill studied 20 hours and 15 hours, respectively. How many hours must she study during the third week to give her an average of 20 hours per week?

A) 20 hours B) 27.5 hours C) 17.5 hours D) 25 hours

Answer: D

122) Over the past two weeks, Jane earned $156 and $290 respectively, at her part time job. What must she earn in the third week to bring her three-week average earnings to $200 per week?

A) $323.00 B) $154.00 C) $223.00 D) $200

Answer: B

123) Bill needs an average of 75 on four tests in science to make the honor roll. What is the lowest score he can receive on the fourth test if his first three scores are 61, 82, and 60?

A) 97 B) 67.7 C) 75 D) 69.5

Answer: A

124) Liz ran 30 mi, 34 mi, and 38 mi during three weeks. How many miles must she run the fourth week to give her an average of 30 miles per week?

A) 33 mi B) 18 mi C) 34 mi D) 30 mi

Answer: B

125) It is necessary to have a 40% antifreeze solution in the radiator of a certain car. The radiator now has 40 liters of 20% solution. How many liters of this should be drained and replaced with 100% antifreeze to get the desired strength?

A) 20 L B) 10 L C) 16 L D) 13.3 L

Answer: B

126) A chemist makes a mixture of concentrated hydrochloric acid and distilled water so that the ratio of acid to water is 7 : 3. If he starts with 28 L of acid, how much water is mixed with the acid?

A) 12 L B) 35 L C) 23 L D) 49 L

Answer: A

127) How many liters of a 50% alcohol solution must be mixed with 40 liters of a 70% solution to get a 60% solution?

A) 4 L B) 40 L C) 8 L D) 80 L

Answer: B

128) In a chemistry class, 4 liters of a 4% silver iodide solution must be mixed with a 10% solution to get a 6% solution. How many liters of the 10% solution are needed?

A) 2.0 L B) 3.0 L C) 1.0 L D) 4.0 L

Answer: A

129) A merchant has coffee worth $4 a pound that she wishes to mix with 90 pounds of coffee worth $16 a pound to get a mixture that can be sold for $12 a pound. How many pounds of the $4 coffee should be used?

A) 67.5 lb B) 135 lb C) 45 lb D) 22.5 lb

Answer: C

130) Tim and Judy mix two kinds of feed for pedigreed dogs. They wish to make 19 pounds of feed worth $0.27 per pound by mixing one kind worth $0.22 per pound with another worth $0.41 per pound. How many pounds of the cheaper kind should they use in the mix? (Round to the nearest pound.)

A) 16 lb B) 14 lb C) 10 lb D) 5 lb

Answer: B

131) A contractor mixes concrete from bags of pre-mix for small jobs. How many bags with 7% cement should he mix with 3 bags of 37% cement to produce a mix containing 12% cement?

A) 17 bags B) 23 bags C) 15 bags D) 18 bags

Answer: C

132) Anne and Nancy use a metal alloy that is 20.75% copper to make jewelry. How many ounces of a 19% alloy must be mixed with a 24% alloy to form 80 ounces of the desired alloy?

A) 52 oz B) 33 oz C) 54 oz D) 28 oz

Answer: A

133) Martha can rake the leaves in her yard in 5 hours. Her brother can do the job in 7 hours. How long will it take them to do the job working together?

A) $\frac{35}{12}$ hr B) $\frac{1}{35}$ hr C) $\frac{35}{2}$ hr D) $\frac{1}{12}$ hr

Answer: A

134) One maid can clean the house in 3 hours. Another maid can do the job in 5 hours. How long will it take them to do the job working together?

A) $\frac{1}{8}$ hr B) $\frac{15}{8}$ hr C) $\frac{1}{15}$ hr D) $\frac{15}{2}$ hr

Answer: B

135) Frank can type a report in 2 hours. James takes 4 hours to type it. How long will it take the two of them typing together?

A) $\frac{1}{6}$ hr B) $\frac{1}{8}$ hr C) 4 hr D) $\frac{4}{3}$ hr

Answer: D

136) An experienced accountant can prepare a tax return in 8 hours. A novice accountant can do the job in 11 hours. How long will it take them to do the job working together?

A) $\frac{1}{19}$ hr B) $\frac{88}{3}$ hr C) $\frac{1}{88}$ hr D) $\frac{88}{19}$ hr

Answer: D

137) A water tank can be filled in 5 minutes and emptied in 9 minutes. If the drain is accidentally left open when the tank is being filled, how long does it take to fill the tank?

A) $\frac{45}{4}$ min B) $\frac{1}{45}$ min C) $\frac{45}{14}$ min D) $\frac{1}{14}$ min

Answer: A

138) Two machines are turned on at 8:00 A.M. If one can produce 39 items each hour and the other can produce 43 items each hour, at what time will they produce a total of 574 items?

A) 4:30 P.M. B) 3:00 P.M. C) 2:00 P.M. D) 4:00 P.M.

Answer: B

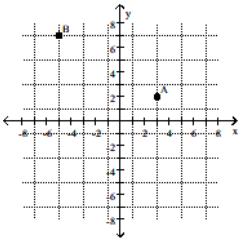
139) Two machines are turned on at 8:00 A.M. If one can produce 36 items each hour and the other can produce 33 items each hour, at what time will they produce a total of 138 items?

A) 9:00 A.M. B) 11:30 A.M. C) 11:00 A.M. D) 10:00 A.M.

Answer: D

Write the ordered pair for each point shown in the xy plane.

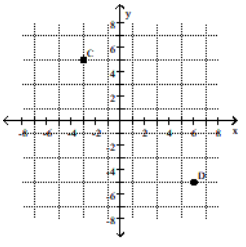
140)



A) A = (2, 22), B = (7, -5)
B) A = (3, 2), B = (-5, 7)
C) A = (3, 7), B = (2, 7)
D) A = (3, 2), B = (7, -5)

Answer: B

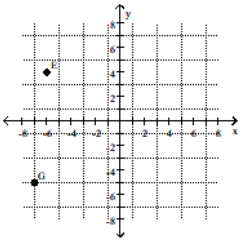
141)



A) C = (5, 10), D = (-5, 6)
B) C = (-3, -5), D = (5, -5)
C) C = (-3, 5), D = (-5, 6)
D) C = (-3, 5), D = (6, -5)

Answer: D

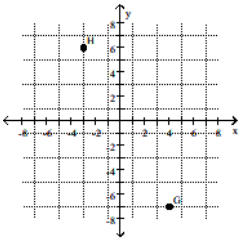
142)



A) E = (-6, 4), G = (-5, -7)
B) E = (4, 4), G = (-5, -7)
C) E = (-6, -5), G = (4, -5)
D) E = (-6, 4), G = (-7, -5)

Answer: D

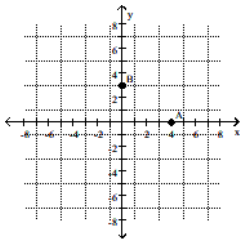
143)



A) G = (4, -7), H = (6, -3)
B) G = (-7, 24), H = (6, -3)
C) G = (4, 6), H = (-7, 6)
D) G = (4, -7), H = (-3, 6)

Answer: D

144)



A) A = (4, 0), B = (3, 0)
B) A = (0, 4), B = (0, 3)
C) A = (4, 0), B = (0, 3)
D) A = (0, 4), B = (3, 0)

Answer: C

Name the quadrant in which the point is located, or the axis on which it lies .

145) (4, 5)
A) Quadrant IV
B) Quadrant II
C) Quadrant III
D) Quadrant I

Answer: D

146) (-3, 9)
A) Quadrant IV
B) Quadrant III
C) Quadrant I
D) Quadrant II

Answer: D

147) (-11, -19)
A) Quadrant I
B) Quadrant II
C) Quadrant III
D) Quadrant IV

Answer: C

148) (6, -14)
A) Quadrant III
B) Quadrant II
C) Quadrant I
D) Quadrant IV

Answer: D

149) (-4, 0)
A) y-axis
B) Quadrant II
C) Quadrant III
D) x-axis

Answer: D

150) (0, -17)
A) Quadrant III
B) x-axis
C) y-axis
D) Quadrant II

Answer: C

Find the distance between the points, and find the midpoint of the line segment joining them.

151) (1, 8) and (5, 2)
A) $2\sqrt{13}; (3, 5)$
B) $2\sqrt{13}; (5, 3)$
C) 2; (6, 10)
D) 2; (-4, 6)

Answer: A

152) (7, -2) and (-3, 2)

A) $2\sqrt{29}; (2, 0)$ B) 6; (4, 0) C) $2\sqrt{29}; (0, 2)$ D) 6; (10, -4)

Answer: A

153) (8a, 9) and (9a, 6)

A) a + 3; (17a, 15) B) $\sqrt{a^2 + 9}; \left(\frac{17}{2}a, \frac{15}{2}\right)$ C) a + 3; (a, 3) D) $\sqrt{a^2 + 9}; \left(\frac{15}{2}, \frac{17}{2}\right)$

Answer: B

154) (π, 0) and (π/4, 1)

A) $\frac{\sqrt{9\pi^2 + 1}}{4}; \left(\frac{3\pi}{8}, \frac{1}{2}\right)$ B) $\frac{\sqrt{9\pi^2 + 16}}{4}; \left(\frac{5\pi}{4}, \frac{1}{2}\right)$

C) $\frac{\sqrt{9\pi + 16}}{4}; \left(\frac{5\pi}{8}, \frac{1}{2}\right)$ D) $\frac{\sqrt{9\pi^2 + 16}}{4}; \left(\frac{5\pi}{8}, \frac{1}{2}\right)$

Answer: D

Find the center and radius of the circle.

155) $x^2 + y^2 = 144$

A) Center: (0, 0) ; radius: 144 B) Center: (0, 0); radius: 12

C) Center: (1, 1) ; radius: 12 D) Center: (1, 1); radius: 144

Answer: B

156) $(x - 4)^2 + y^2 = 64$

A) Center: (0, 4); radius: 8 B) Center: (4, 0); radius: 8

C) Center: (0, -4); radius: 64 D) Center: (-4, 0); radius: 64

Answer: B

157) $(x - 4)^2 + (y + 9)^2 = 9$

A) Center: (-9, 4); radius: 9 B) Center: (4, -9); radius: 3

C) Center: (4, -9); radius: 9 D) Center: (-9, 4); radius: 3

Answer: B

158) $(x + 3)^2 + (y - 1)^2 = 81$

A) Center: (1, -3); radius: 81 B) Center: (-3, 1); radius: 81

C) Center: (-3, 1); radius: 9 D) Center: (1, -3); radius: 9

Answer: C

159) $(x - 3)^2 + (y - 7)^2 = 25$

A) Center: (7, 3); radius: 5 B) Center: (3, 7); radius: 5

C) Center: (-7, -3); radius: 5 D) Center: (-3, -7); radius: 25

Answer: B

160) $x^2 + (y - 3)^2 = 9$

A) Center: (3, 0); radius: 3 B) Center: (0 , 3); radius: 9

C) Center: (0, 3); radius: 3 D) Center: (-3, 0); radius: 3

Answer: C

161) $y^2 = 25 - (x + 10)^2$

A) Center: (-10, 0); radius: 5
B) Center: (0, -10); radius: 25
C) Center: (10, 0); radius: 25
D) Center: (0, 10); radius: 5

Answer: A

162) $x^2 = 16 - (y + 5)^2$

A) Center: (-5, 0); radius: 16
B) Center: (0, -5); radius: 4
C) Center: (5, 0); radius: 16
D) Center: (0, 5); radius: 4

Answer: B

163) $(x - 9)^2 = 4 - (y + 7)^2$

A) Center: (-9, 7); radius: 4
B) Center: (9, -7); radius: 2
C) Center: (7, -9); radius: 4
D) Center: (-7, 9); radius: 2

Answer: B

164) $(y + 5)^2 = 9 - (x + 8)^2$

A) Center: (5, 8); radius: 9
B) Center: (-8, -5); radius: 3
C) Center: (8, 5); radius: 3
D) Center: (-5, -8); radius: 9

Answer: B

Write the standard equation for the circle.

165) Center at (7, -1), radius 3

A) $(x - 1)^2 + (y + 7)^2 = 3$
B) $(x + 7)^2 + (y - 1)^2 = 9$
C) $(x + 1)^2 + (y - 7)^2 = 3$
D) $(x - 7)^2 + (y + 1)^2 = 9$

Answer: D

166) Center at (-8, 0), radius 7

A) $x^2 + (y - 8)^2 = 7$
B) $x^2 + (y + 8)^2 = 7$
C) $(x + 8)^2 + y^2 = 49$
D) $(x - 8)^2 + y^2 = 49$

Answer: C

167) Center at (2, 3), radius $\sqrt{3}$

A) $(x + 2)^2 + (y + 3)^2 = 3$
B) $(x + 3)^2 + (y + 2)^2 = 9$
C) $(x - 2)^2 + (y - 3)^2 = 3$
D) $(x - 3)^2 + (y - 2)^2 = 9$

Answer: C

168) Center at $\left(6, -\frac{1}{2}\right)$, radius $\frac{1}{3}$

A) $\left(x + \frac{1}{2}\right)^2 + (y - 6)^2 = \frac{1}{3}$
B) $\left(x - \frac{1}{2}\right)^2 + (y + 6)^2 = \frac{1}{3}$
C) $(x + 6)^2 + \left(y - \frac{1}{2}\right)^2 = \frac{1}{9}$
D) $(x - 6)^2 + \left(y + \frac{1}{2}\right)^2 = \frac{1}{9}$

Answer: D

169) Center at (-7, -5), passing through (-4, -1)

A) $(x + 5)^2 + (y + 7)^2 = 9$
B) $(x + 7)^2 + (y + 5)^2 = 25$
C) $(x - 5)^2 + (y - 7)^2 = 9$
D) $(x - 7)^2 + (y - 5)^2 = 25$

Answer: B

170) Center (3, 22), passing through the origin

A) $(x - 3)^2 + (y - 22)^2 = 493$

B) $(x - 22)^2 + (y - 3)^2 = 493$

C) $(x - 3)^2 + (y - 22)^2 = 22$

D) $(x - 22)^2 + (y - 3)^2 = 22$

Answer: A

171) Center (3, 2), passing through (0, 2)

A) $(x - 2)^2 + (y - 3)^2 = 3$

B) $(x - 2)^2 + (y - 3)^2 = 9$

C) $(x - 3)^2 + (y - 2)^2 = 9$

D) $(x - 3)^2 + (y - 2)^2 = 3$

Answer: C

172) Center (16, 18), passing through (16, 0)

A) $(x - 18)^2 + (y - 16)^2 = 256$

B) $(x - 16)^2 + (y - 18)^2 = 256$

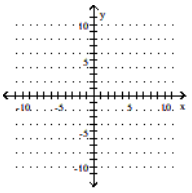
C) $(x - 18)^2 + (y - 16)^2 = 18$

D) $(x - 16)^2 + (y - 18)^2 = 324$

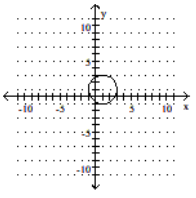
Answer: D

Graph the equation.

173) $x^2 + y^2 = 4$



A)



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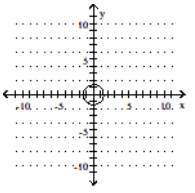

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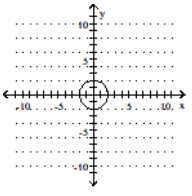
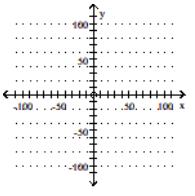
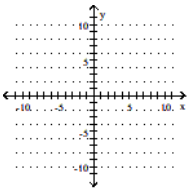


D)

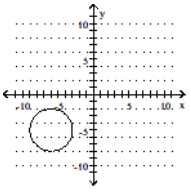


Answer: C

174) $(x - 6)^2 + (y - 5)^2 = 9$



A)



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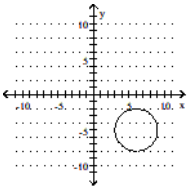
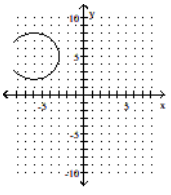


C)



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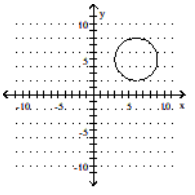
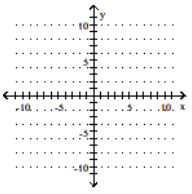
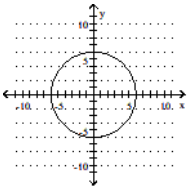


Answer: D

175) $x^2 + (y - 2)^2 = 36$



A)



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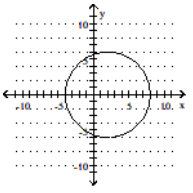
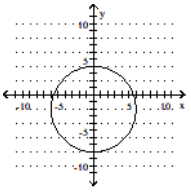
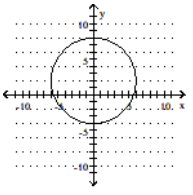


C)

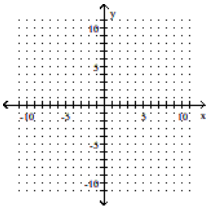


D)

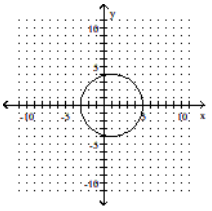


Answer: D

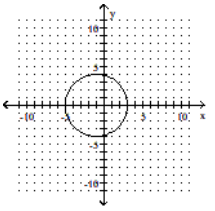
176) $(x - 1)^2 + y^2 = 16$



A)



B)



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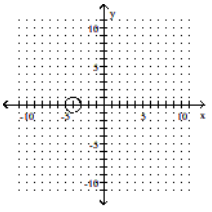
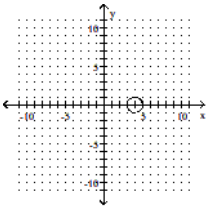
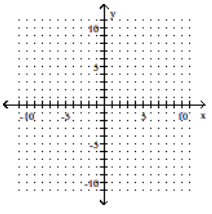


D)

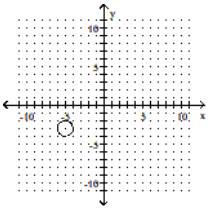


Answer: A

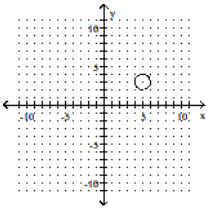
177) $(x - 5)^2 + (y - 3)^2 = 1^2$



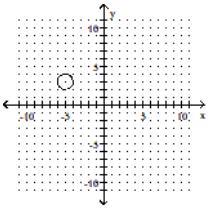
A)



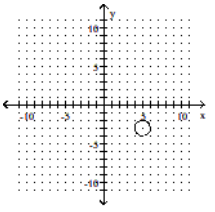
B)



C)

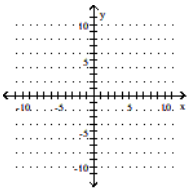


D)

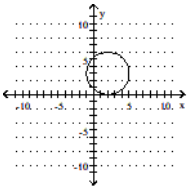


Answer: B

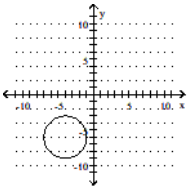
178) $x^2 + y^2 - 4x - 6y + 4 = 0$



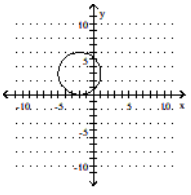
A)



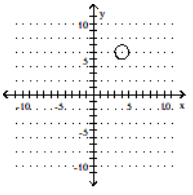
B)



C)

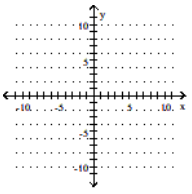


D)

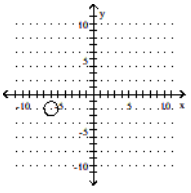


Answer: A

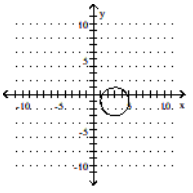
179) $x^2 + y^2 + 6x + 2y + 6 = 0$



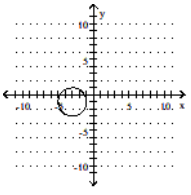
A)



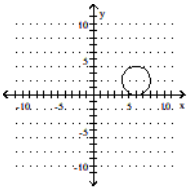
B)



C)



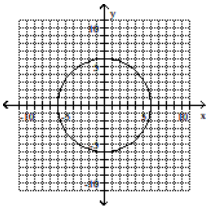
D)



Answer: C

Write the standard equation for the circle.

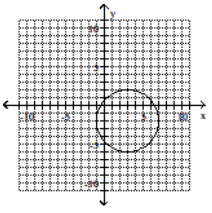
180)



A) $x^2 + y^2 = 36$ B) $x^2 + y^2 = 6$ C) $x^2 + y^2 = 16$ D) $x^2 + y^2 = 12$

Answer: A

181)

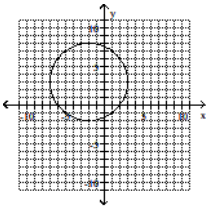


A) $(x - 3)^2 + (y + 2)^2 = 4$ B) $(x - 3)^2 + (y + 2)^2 = 16$

C) $(x + 3)^2 + (y - 2)^2 = 16$ D) $(x + 3)^2 + (y - 2)^2 = 4$

Answer: B

182)

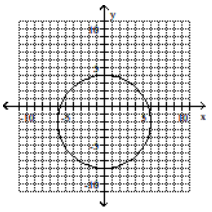


A) $(x + 2)^2 + (y - 3)^2 = 25$ B) $(x + 2)^2 + (y - 3)^2 = 5$

C) $(x - 2)^2 + (y + 3)^2 = 5$ D) $(x - 2)^2 + (y + 3)^2 = 25$

Answer: A

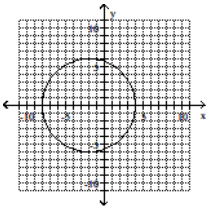
183)



A) $x^2 + (y - 2)^2 = 36$ B) $(x + 2)^2 + y^2 = 36$ C) $x^2 + (y + 2)^2 = 36$ D) $x^2 + (y + 2)^2 = 6$

Answer: C

184)

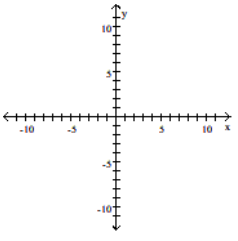


A) $(x + 2)^2 + y^2 = 6$ B) $(x + 2)^2 + y^2 = 36$ C) $(x - 2)^2 + y^2 = 36$ D) $x^2 + (y + 2)^2 = 36$

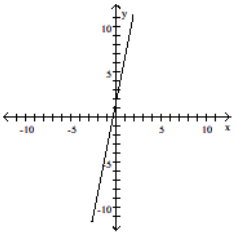
Answer: B

Find the x- and y-intercepts for the equation. Then graph the equation.

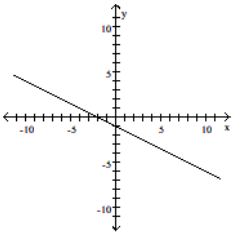
185) $15y - 3x = -6$



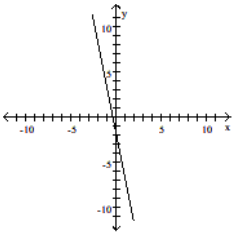
A) $(-\frac{2}{5}, 0), (0, 2)$



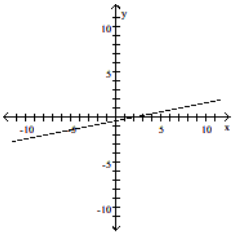
B) $(-2, 0), (0, -\frac{2}{5})$



C) $(-\frac{2}{5}, 0), (0, -2)$

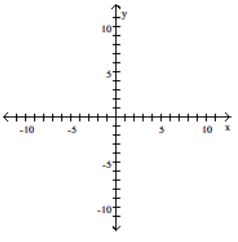


D) $(2, 0), (0, -\frac{2}{5})$

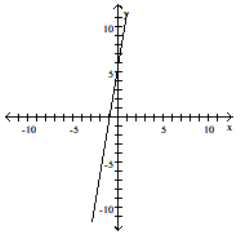


Answer: D

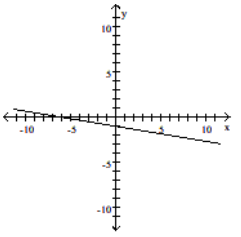
186) $-6x - 36y = 36$



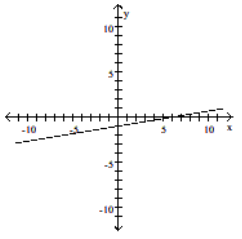
A) (-1, 0), (0, 6)



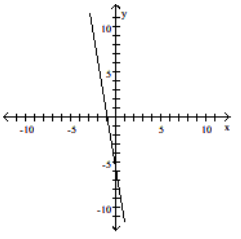
B) (-6, 0), (0, -1)



C) (6, 0), (0, -1)

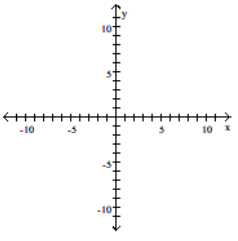


D) (-1, 0), (0, -6)

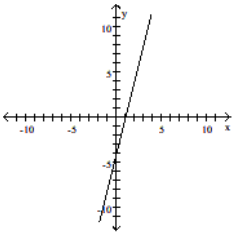


Answer: B

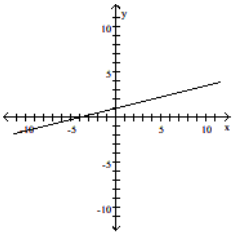
187) 6x - 24y = 24



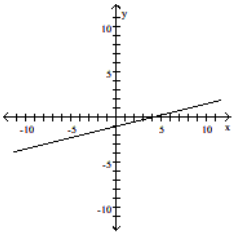
A) (1, 0), (0, -4)



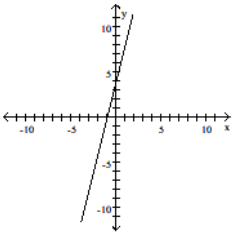
B) (-4, 0), (0, 1)



C) (4, 0), (0, -1)

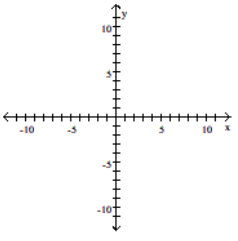


D) (-1, 0), (0, 4)

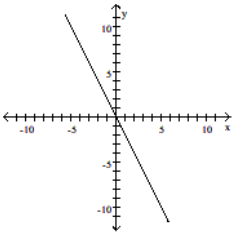


Answer: C

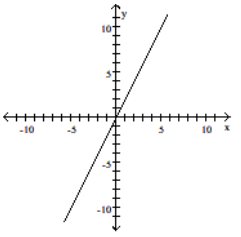
188) 2x - 10y = 0



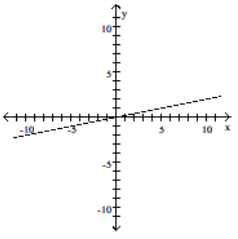
A) (0, 0), (0, 0)



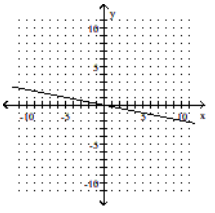
B) (0, 0), (0, 0)



C) (0, 0), (0, 0)

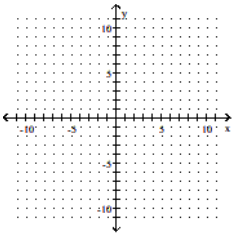


D) (0, 0), (0, 0)

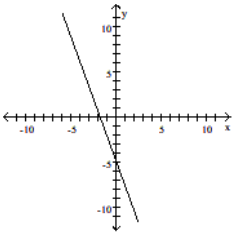


Answer: C

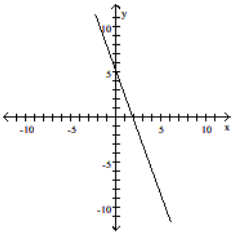
189) $\frac{11}{5}x + \frac{4}{5}y = 4$



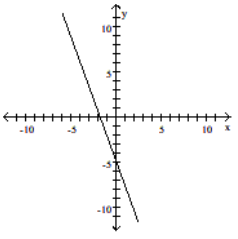
A) $(-\frac{20}{11}, 0), (0, 5)$



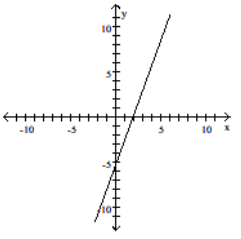
B) $(\frac{20}{11}, 0), (0, 5)$



C) $(-\frac{20}{11}, 0), (0, -5)$

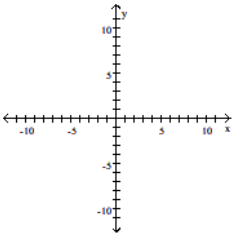


D) $(\frac{20}{11}, 0), (0, -5)$

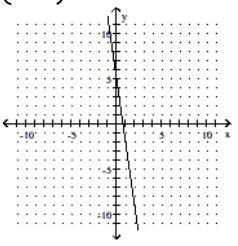


Answer: B

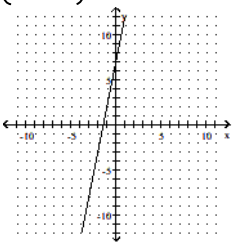
190) $y = 7x + 5$



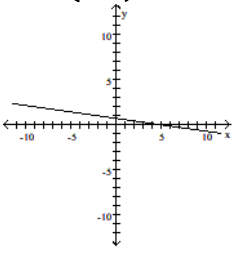
A) $\left(\frac{5}{7}, 0\right)$, (0, 5)



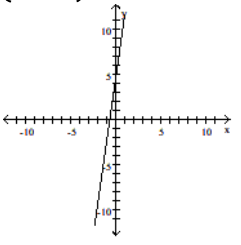
B) $\left(-\frac{7}{5}, 0\right)$, (0, 7)



C) (5, 0), $\left(0, \frac{5}{7}\right)$

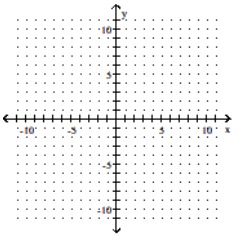


D) $\left(-\frac{5}{7}, 0\right)$, (0, 5)

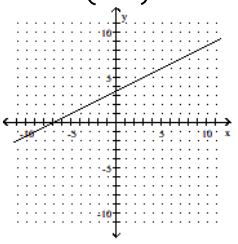


Answer: D

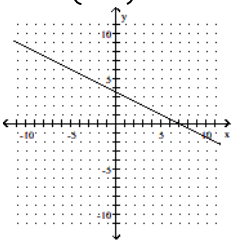
191) x = 2y - 7



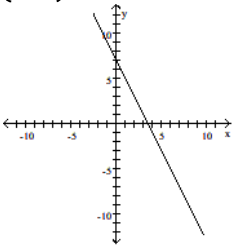
A) $(-7, 0), \left(0, \frac{7}{2}\right)$



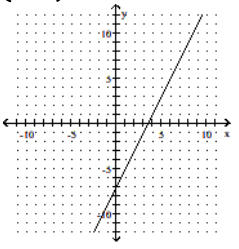
B) $(7, 0), \left(0, \frac{7}{2}\right)$



C) $\left(\frac{7}{2}, 0\right), (0, 7)$

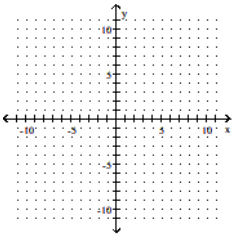


D) $\left(\frac{7}{2}, 0\right), (0, -7)$

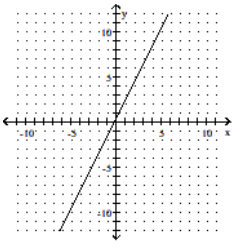


Answer: A

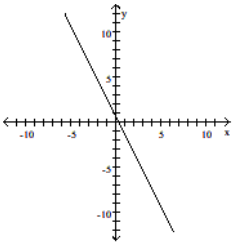
192) $6x - 3y = 1.8$



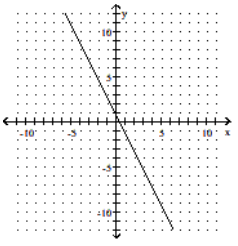
A) (-0.6, 0), (0, 0.3)



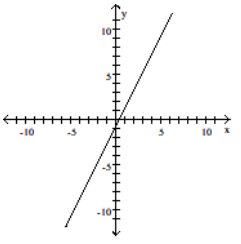
B) (0.6, 0), (0, 0.3)



C) (0.3, 0), (0, 0.6)



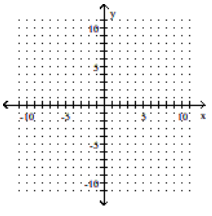
D) (0.3, 0), (0, -0.6)



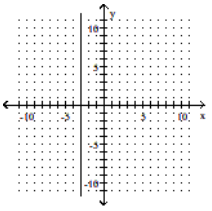
Answer: D

Graph the equation in the rectangular coordinate system.

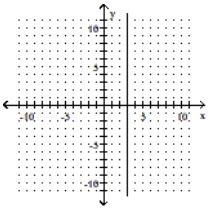
193) y = -1



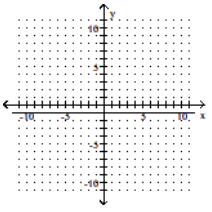
A)



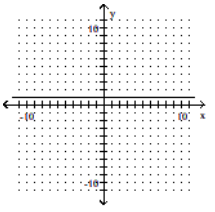
B)



C)

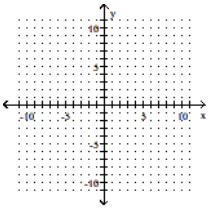


D)

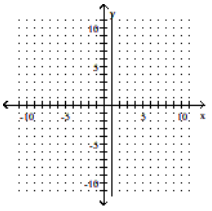


Answer: C

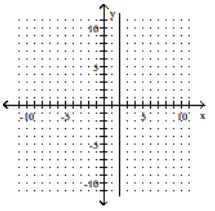
194) x = 1



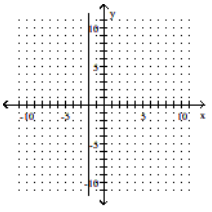
A)



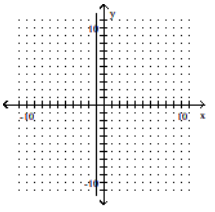
B)



C)

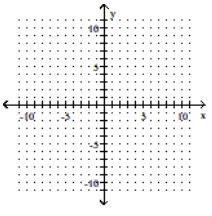


D)

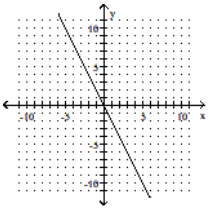


Answer: A

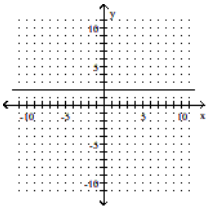
195) y + 2 = 0



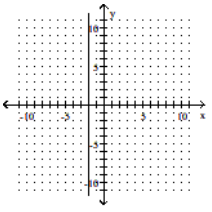
A)



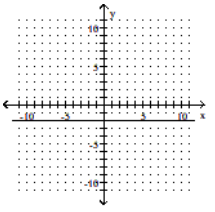
B)



C)

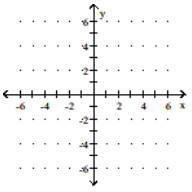


D)

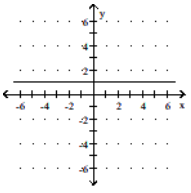


Answer: D

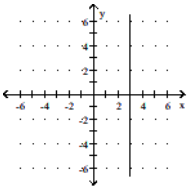
196) y - 1 = 2



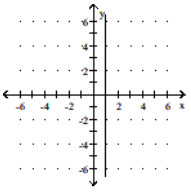
A)



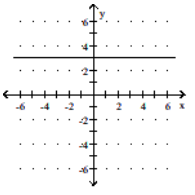
B)



C)

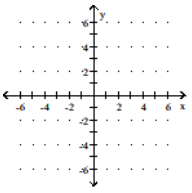


D)

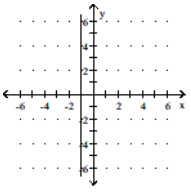


Answer: D

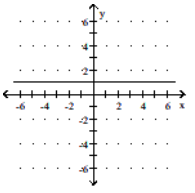
197) 4 - x = 3



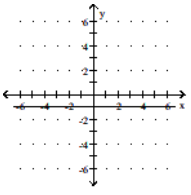
A)



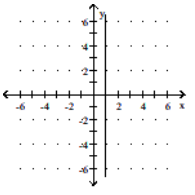
B)



C)



D)

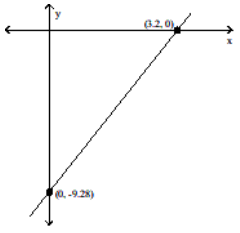


Answer: D

Find the solution to the given equation by reading the accompanying graph.

198) 2.9x - 9.28 = 0

$y = 2.9x - 9.28$

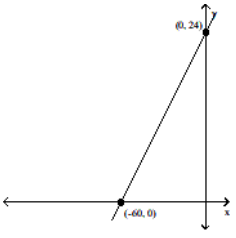


A) {-2.9} B) {2.9} C) {-3.2} D) {3.2}

Answer: D

199) $\frac{2}{5}x + 24 = 0$

$y = \frac{2}{5}x + 24$



A) {- 60} B) {-24} C) $\{-\frac{1}{60}\}$ D) {24}

Answer: A

Use a graphing calculator to estimate the solution of the equation to two decimal places.

200) 5.93x - 425 = 0

A) {0.02} B) {71.73} C) {0.01} D) {71.67}

Answer: D

201) 2.5(1.9x + 7.9) - 9.25(1.7x - 3.27) = 0

A) {0.42} B) {2.44} C) {4.56} D) {2.37}

Answer: C

Solve the problem.

202) The cost, c, in dollars of car rental is $c = 6 + \frac{1}{4}m$, where m is the number of miles driven. Estimate the cost of car rental if the number of miles driven is 32.

A) About 14 dollars B) About 33.5 dollars C) About 10 dollars D) About 19 dollars

Answer: A

203) The population p, in thousands, of one town can be approximated by $p = 4 + \frac{7}{2}d$ where d is the number of years since 1985. Estimate the population of the town in the year 1994.

A) About 44,000 B) About 36,000 C) About 36 D) About 40,000

Answer: B

204) The value, v, in hundreds of dollars, of Juan's computer is approximated by $v = -\frac{1}{2}t + 8$, where t is the number of years since he first bought the computer. Estimate the value of the computer 2 years after it was purchased.

A) $700 B) $900 C) $760 D) $600

Answer: A

205) During the month of January 1997, the depth, d, of snow in inches at the base of one ski resort could be approximated by $d = -2t + 70$, where t is the number of days since December 31st. Estimate the depth of snow on January 28th.

A) 42 inches B) 22 inches C) 14 inches D) 19 inches

Answer: C

206) The cost, T, in hundreds of dollars, of tuition at one community college is given by $T = 3 + \frac{3}{4}c$, where c is the number of credits for which a student registers. Estimate the cost of tuition if a student registers for 13 credits.

A) About $1300 B) About $2200 C) About $1000 D) About $1800

Answer: A

207) Alison sets aside $40 each month to spend on books and CDs. If she spends c dollars on CDs in a given month, she may spend b dollars on books, where $c + b = 40$. Estimate the amount Alison may spend on books in March if she spends $34 on CDs.

A) $74 B) $13 C) $6 D) $17

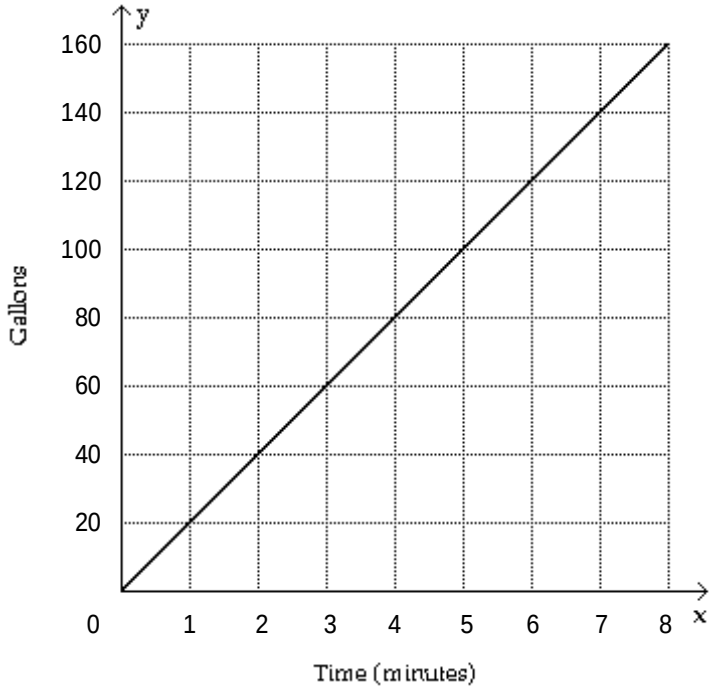
Answer: C

208) In one U.S. town the annual consumption, b, of beef (in kg per person) can be estimated by $b = -\frac{1}{3}t + 25$, where t is the number of years since 1975. Estimate the beef consumption in the year 1988.

A) About 21 kg per person B) About 15 kg per person
C) About 29 kg per person D) About 18 kg per person

Answer: A

209)



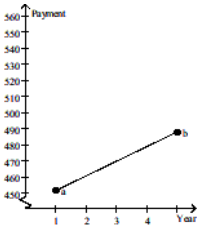
The graph shows the amount of gas in a 200-gallon tank after x minutes have elapsed. (i) Is the gas entering or leaving the tank? (ii) Find the x-intercept and the y-intercept.

A) Leaving; x-intercept is 0 and y-intercept is 200
B) Entering; both intercepts are 0
C) Leaving; both intercepts are 0
D) Entering; x-intercept is 200 and y-intercept is 0

Answer: B

210) The graph shows an idealized linear relationship for the average monthly payments to retirees from 1995 through 1999. Find the midpoint of the line segment to estimate the payment for 1997.

Average Monthly Payments to Retiree



1995 1997 1999

a = $452; b = $488

A) 470 dollars
B) 18 dollars
C) 488 dollars
D) 500 dollars

Answer: A

Find the slope of the line containing the pair of points.

211) (-8, -5), (-3, 2)

A) $\frac{7}{5}$ B) $-\frac{5}{7}$ C) $-\frac{7}{5}$ D) $\frac{5}{7}$

Answer: A

212) (7, -8), (-4, -9)

A) 11 B) - 11 C) $-\frac{1}{11}$ D) $\frac{1}{11}$

Answer: D

213) (-7, -4), (8, 4)

A) $\frac{15}{8}$ B) $-\frac{15}{8}$ C) $-\frac{8}{15}$ D) $\frac{8}{15}$

Answer: D

214) $\left(\frac{1}{8}, \frac{1}{2}\right), \left(\frac{1}{4}, \frac{1}{4}\right)$

A) 2 B) No slope C) -1 D) -2

Answer: D

215) (-8, -3), (-8, 4)

A) 0 B) No slope C) 7 D) -7

Answer: B

216) (-7, 9), (7, 9)

A) 0 B) 14 C) -14 D) No slope

Answer: A

Find the equation of the line through the given pair of points. Solve it for y if possible.

217) (-5, -9), (-2, -1)

A) x = -5 B) $y = \frac{7}{2}x + \frac{17}{2}$

C) y = -10x - 59 D) $y = \frac{8}{3}x + \frac{13}{3}$

Answer: D

218) (-7, -6), (-4, 9)

A) y = 15x + 99 B) x = -7 C) y = 5x + 29 D) y = 3x + 15

Answer: C

219) (4, 5), (-8, 5)

A) y = 5 B) y = 4x - 19 C) y = 2x - 11 D) y = 8x - 35

Answer: A

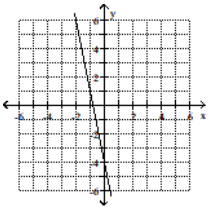
220) (9, 10), (9, -1)

A) x = 10 B) x = 9 C) y = 9 D) y = 10

Answer: B

Write an equation in slope-intercept form for the line shown.

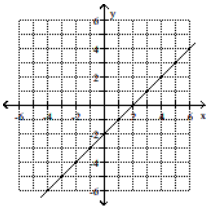
221)



A) $y = -5x - 4$ B) $y = 5x + 4$ C) $y = -5x + 4$ D) $y = 5x - 4$

Answer: A

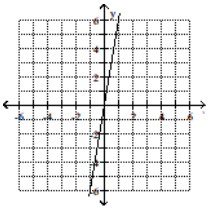
222)



A) $y = -x - 2$ B) $y = -x + 2$ C) $y = x - 2$ D) $y = x + 2$

Answer: C

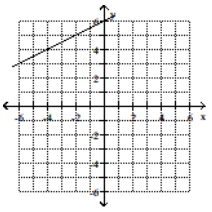
223)



A) $y = -6x$ B) $y = 6x$ C) $y = \frac{x}{-6}$ D) $y = \frac{x}{6}$

Answer: B

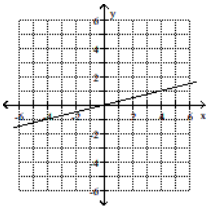
224)



A) $y = \frac{1}{2}x + 6$ B) $y = 2x - 6$ C) $y = \frac{1}{2}x - 6$ D) $y = 2x + 6$

Answer: A

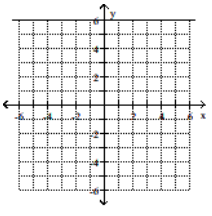
225)



A) $y = -4x$ B) $y = 4x$ C) $y = \frac{1}{4}x$ D) $y = -\frac{1}{4}x$

Answer: C

226)



A) $y = 6$ B) $x = -6$ C) $x = 6$ D) $y = -6$

Answer: A

Change the equation to slope-intercept form and identify the slope and y-intercept.

227) $11x + 9y = 15$

A) $y = 11x - 15, 11, (0, -15)$

B) $y = -\frac{11}{9}x + \frac{5}{3}, -\frac{11}{9}, \left(0, \frac{5}{3}\right)$

C) $y = \frac{11}{9}x - \frac{5}{3}, \frac{11}{9}, \left(0, -\frac{5}{3}\right)$

D) $y = \frac{11}{9}x + \frac{5}{3}, \frac{11}{9}, \left(0, \frac{5}{3}\right)$

Answer: B

228) $2x - 7y = 1$

A) $y = 2x - 1, 2, (0, -1)$

B) $y = \frac{7}{2}x + \frac{1}{2}, \frac{7}{2}, \left(0, \frac{1}{2}\right)$

C) $y = \frac{2}{7}x - \frac{1}{7}, \frac{2}{7}, \left(0, -\frac{1}{7}\right)$

D) $y = \frac{2}{7}x + \frac{1}{7}, \frac{2}{7}, \left(0, \frac{1}{7}\right)$

Answer: C

229) $-3x + 6y = 14$

A) $y = \frac{1}{2}x - \frac{7}{3}, \frac{1}{2}, \left(0, -\frac{7}{3}\right)$

B) $y = 2x + \frac{7}{3}, 2, \left(0, \frac{7}{3}\right)$

C) $y = \frac{1}{2}x + \frac{7}{3}, \frac{1}{2}, \left(0, \frac{7}{3}\right)$

D) $y = -\frac{1}{2}x + \frac{7}{3}, -\frac{1}{2}, \left(0, \frac{7}{3}\right)$

Answer: C

230) $3y - 5x = 7$

A) $y = -\frac{5}{3}x + \frac{7}{3}, -\frac{5}{3}, \left(0, \frac{7}{3}\right)$

B) $y = \frac{5}{3}x + \frac{7}{3}, \frac{5}{3}, \left(0, \frac{7}{3}\right)$

C) $y = \frac{3}{5}x + \frac{7}{3}, \frac{3}{5}, \left(0, \frac{7}{3}\right)$

D) $y = \frac{5}{3}x - \frac{7}{3}, \frac{5}{3}, \left(0, -\frac{7}{3}\right)$

Answer: B

231) $y - 5 = 4(x + 4)$

A) $y = 4x + 11, 4, (0, 11)$

B) $y = 4x + 9, 4, (0, 9)$

C) $y = \frac{4}{5}x + \frac{16}{5}, \frac{4}{5}, (0, \frac{16}{5})$

D) $y = 4x + 21, 4, (0, 21)$

Answer: D

232) $y + 8 = \frac{7}{6}(x - 5)$

A) $y = \frac{7}{6}x - \frac{43}{6}, \frac{7}{6}, \left(0, -\frac{43}{6}\right)$

B) $y = \frac{7}{6}x + \frac{83}{6}, \frac{7}{6}, \left(0, \frac{83}{6}\right)$

C) $y = \frac{7}{6}x - \frac{53}{6}, \frac{7}{6}, \left(0, -\frac{53}{6}\right)$

D) $y = \frac{7}{6}x - \frac{83}{6}, \frac{7}{6}, \left(0, -\frac{83}{6}\right)$

Answer: D

233) $y + 13 = 0$

A) $y = -13, -13, (0, -13)$

B) $y = -13, -13, (0, 0)$

C) $y = 13, 0, (0, 13)$

D) $y = -13, 0, (0, -13)$

Answer: D

Find the equation of the line in slope-intercept form.

234) The line through (2, 2) with slope $-\frac{5}{9}$

A) $y = -\frac{5}{9}x + \frac{28}{9}$ B) $y = -\frac{5}{9}x + \frac{9}{28}$ C) $y = -\frac{5}{9}x - \frac{28}{9}$ D) $y = -\frac{9}{5}x + \frac{28}{9}$

Answer: A

235) The line through (3, 4) with slope $\frac{3}{2}$

A) $y = \frac{3}{2}x - \frac{1}{2}$ B) $y = \frac{2}{3}x - \frac{1}{3}$ C) $y = -\frac{3}{2}x + \frac{1}{2}$ D) $y = \frac{3}{2}x + \frac{1}{2}$

Answer: A

236) The line through (5, 3) with slope $-\frac{3}{4}$

A) $y = -\frac{3}{4}x + \frac{4}{27}$ B) $y = -\frac{3}{4}x + \frac{27}{4}$ C) $y = -\frac{3}{4}x - \frac{27}{4}$ D) $y = -\frac{4}{3}x - \frac{4}{27}$

Answer: B

237) The line through (7, -2) with slope $-\frac{3}{2}$

A) $y = -\frac{3}{2}x + \frac{17}{2}$ B) $y = -\frac{2}{3}x - \frac{17}{3}$ C) $y = \frac{3}{2}x - \frac{17}{2}$ D) $y = -\frac{3}{2}x - \frac{17}{2}$

Answer: A

238) The line through (7, -1) with slope $-\frac{4}{5}$

A) $y = -\frac{4}{5}x + \frac{27}{5}$ B) $y = -\frac{4}{5}x + \frac{33}{5}$ C) $y = \frac{4}{5}x - \frac{23}{5}$ D) $y = -\frac{4}{5}x + \frac{23}{5}$

Answer: D

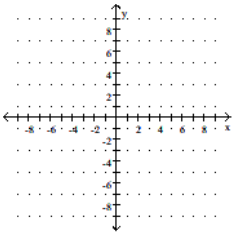
239) The line through (12, -3) with slope $\frac{1}{3}$

A) $y = \frac{1}{3}x + 1$ B) $y = \frac{1}{3}x - 7$ C) $y = \frac{1}{3}x + 3$ D) $y = \frac{1}{3}x - 1$

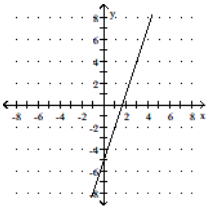
Answer: B

Use the y-intercept and slope to sketch the graph of the equation.

240) y = 3x + 5



A)



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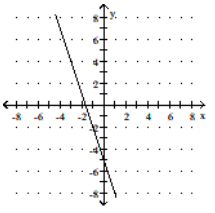
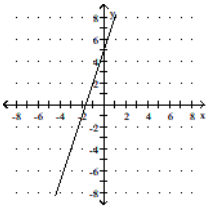
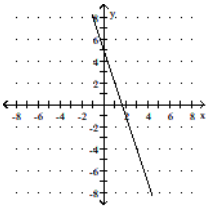


C)

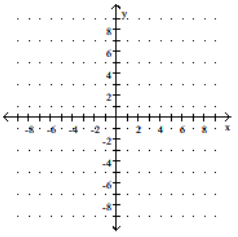


D)

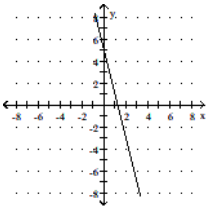


Answer: C

241) y = 4x - 5



A)



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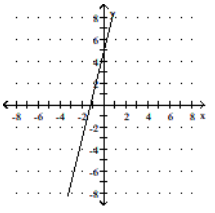

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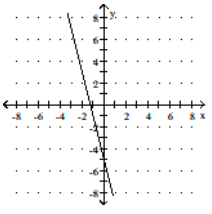
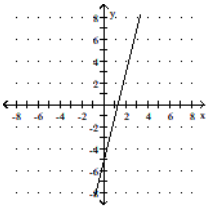
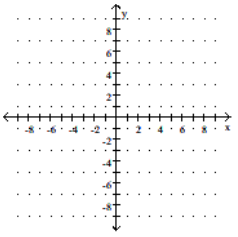


D)

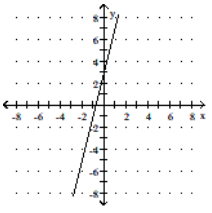


Answer: D

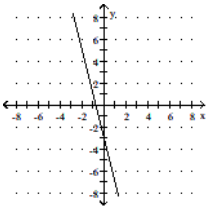
242) y = -4x + 3



A)



B)



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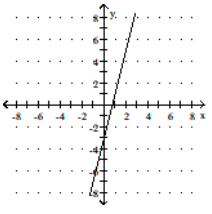

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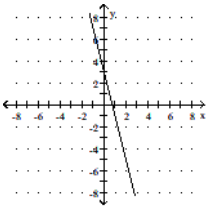
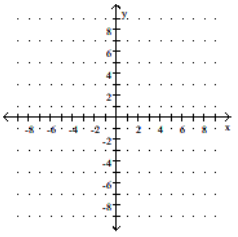
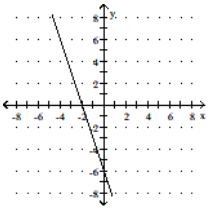


Answer: D

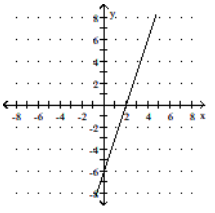
243) y = -3x - 6



A)



B)



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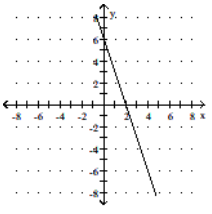

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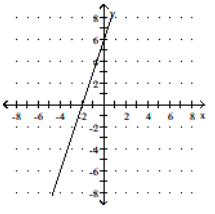
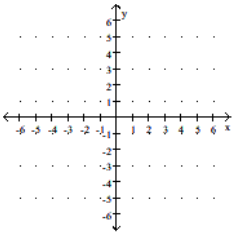
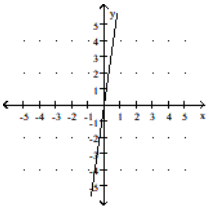


Answer: A

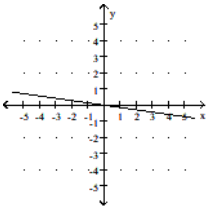
244) y = - 7x



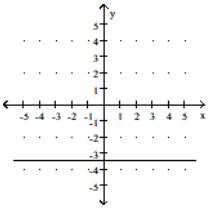
A)



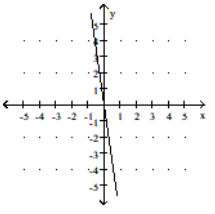
B)



C)

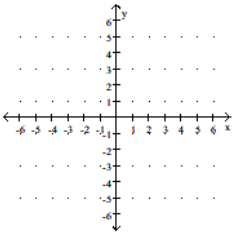


D)

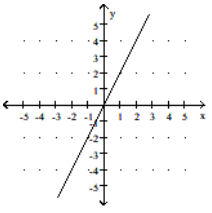


Answer: D

245) y = 2



A)



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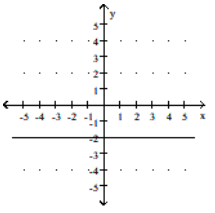

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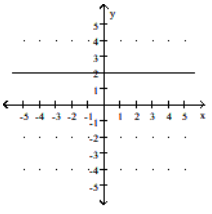
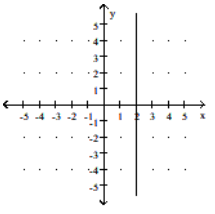
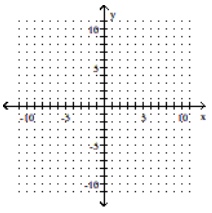


D)

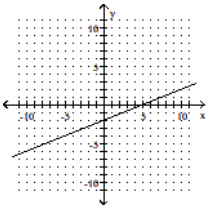


Answer: C

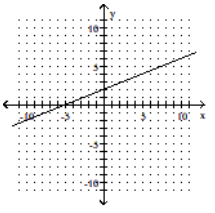
246) $y = \frac{2}{5}x - 2$



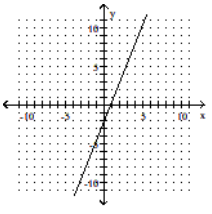
A)



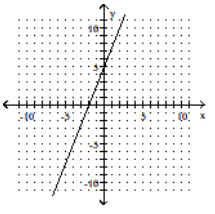
B)



C)

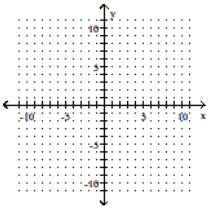


D)

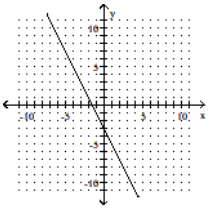


Answer: A

247) -3x - 6y = -9



A)



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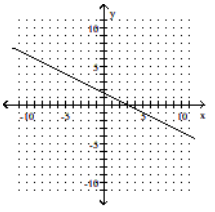
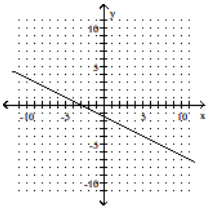
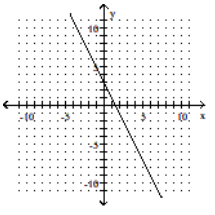


C)



D)



Answer: B

Find the equation of the line through the given pair of points in standard form using only integers.

248) (3, 1) and (-2, 6)

A) 5x + 5y = 20 B) 5x - 5y = 20 C) 6x + 5y = 20 D) 5x + 5y = -20

Answer: A

249) (4, -2) and (-1, 1)

A) 3x - 5y = 2 B) 3x + 5y = 2 C) 3x + 5y = 5 D) 3x + 5y = -2

Answer: B

250) (-4, -1) and (3, 4)

A) 5x - 7y = -1 B) 5x - 7y = -19 C) 5x - 7y = -13 D) 5x - 4y = -13

Answer: C

251) (-3, 3) and (3, 8)

A) 5x - 6y = -27 B) 5x - 3y = -33 C) 5x - 6y = -33 D) 8x - 6y = -33

Answer: C

252) (-3, -3) and (5, 8)

A) 11x - 8y = -15 B) 11x - 3y = -9 C) 8x - 8y = -9 D) 11x - 8y = -9

Answer: D

253) (3, -2) and (3, 2)

A) y = 2 B) x = 3 C) x = -2 D) y = 3

Answer: B

254) (3, -1) and (3, 3)

A) y = 3 B) y = -1 C) x = -1 D) x = 3

Answer: D

255) (-3, 0) and (0, -5)

A) -5x - 3y = -15 B) -5x + 3y = 15 C) 5x - 3y = 15 D) -5x - 3y = 15

Answer: D

Find the slope of the line described.

256) A line parallel to 3x + 8y = -4

A) $-\frac{1}{2}$ B) $-\frac{3}{8}$ C) $\frac{8}{3}$ D) $\frac{1}{2}$

Answer: B

257) A line perpendicular to -5x + 5y = 6

A) $-\frac{6}{5}$ B) 1 C) $\frac{6}{5}$ D) - 1

Answer: D

258) A line perpendicular to the line x = 18.

A) $\frac{1}{18}$ B) undefined C) -18 D) 0

Answer: D

259) A line parallel to the line y = 17.

A) -17 B) 0 C) undefined D) $\frac{1}{17}$

Answer: B

Write an equation in standard form using only integers for the line described.

260) The line with slope -7, going through (6, 0)

A) -6x + y = -7 B) 7x + y = 42 C) -7x + y = 6 D) 6x + y = -7

Answer: B

261) The line with slope $\frac{2}{7}$, going through (0, 5)

A) 2x + 7y = -35 B) 2x - 7y = 35 C) 7x - 2y = -35 D) 2x - 7y = -35

Answer: D

262) The line through (2, 4), parallel to $y = -\frac{4}{9}x + 1$

A) 4x - 9y = 44 B) 4x + 9y = -44 C) 4x + 9y = 44 D) 9x + 4y = -44

Answer: C

263) The line through (2, 2), parallel to $y = -\frac{2}{3}x + 1$

A) 2x - 3y = 10 B) 3x + 2y = -10 C) 2x + 3y = 10 D) 2x + 3y = -10

Answer: C

264) The line through (0, 4), perpendicular to $y = \frac{9}{8}x + 2$

A) 8x - 9y = 36 B) 8x + 9y = -36 C) 8x + 9y = 36 D) 9x + 8y = -36

Answer: C

265) The line through (0, 3), perpendicular to $y = -\frac{8}{5}x - 1$

A) -5x + 8y = -24 B) -5x + 8y = 24 C) 8x - 5y = -24 D) -5x - 8y = 24

Answer: B

266) The line perpendicular to x = 1 and containing (10, -7)

A) y = 10 B) y = -7 C) x = 10 D) x = -7

Answer: B

267) The line parallel to y = 0 and containing (6, 4)

A) x = 6 B) x = -4 C) y = 4 D) y = -6

Answer: C

Solve the problem.

268) Find the value of k so that the graph of 17y - kx = 4 and the line containing the points (5, -8) and (2, 4) are parallel.

A) k = -67 B) k = -68 C) k = -67.5 D) k = -70

Answer: B

269) Find the value of k so that the graph of 9y + kx = 4 and the line containing the points (5, -8) and (2, 4) are parallel.

A) k = 34 B) k = 36.5 C) k = 36 D) k = 37

Answer: C

270) Find the value of k so that the graph of 19y + kx = 4 and the line containing the points (5, -8) and (2, 4) are perpendicular.

A) k = 76 B) k = -4.75 C) k = 4.75 D) k = -76

Answer: B

271) Find the value of k so that the graph of 13y + kx = 4 and the line containing the points (5, -8) and (2, 4) are perpendicular.

A) k = -3.25 B) k = 52 C) k = 3.25 D) k = -52

Answer: A

272) Find the value of k so that the graph of 5y + kx = 4 and the line containing the points (5, -8) and (-2, -4) are perpendicular.

A) k = 11.25 B) k = -8.75 C) k = 8.75 D) k = -11.25

Answer: B

273) Find the value of a for the line that passes through (a, -7) and (4, a) and has a slope of 6.

A) $-\frac{18}{7}$ B) $-\frac{17}{5}$ C) $\frac{31}{7}$ D) $\frac{17}{7}$

Answer: D

274) Find the value of a for the line that passes through (a, -8) and (-5, -2) and is perpendicular to y = ax + 1.

A) 0 B) - 8 C) 1 D) $\frac{3}{5}$

Answer: C

275) Decide whether or not the points are the vertices of a right triangle.
(-9, -1), (-4, -1), (-4, 7)

A) No B) Yes

Answer: B

276) Decide whether or not the points are the vertices of a right triangle.
(-1, 0), (1, 4), (3, 3)

A) No B) Yes

Answer: B

277) Decide whether or not the points are the vertices of a right triangle.
(-5, 0), (1, 2), (5, -10)

A) No B) Yes

Answer: B

278) Decide whether or not the points are the vertices of a right triangle.
(-9, 8), (-3, 10), (-4, 5)

A) No B) Yes

Answer: A

279) Decide whether or not the points are the vertices of a right triangle.
(7, 11), (13, 13), (19, 6)

A) No B) Yes

Answer: A

280) Decide whether or not the points are the vertices of a right triangle.
(-2, 4), (9, -7), (11, -5)

A) No B) Yes

Answer: B

281) Decide whether or not the points are the vertices of a parallelogram.
(-12, -10), (-10, 0), (3, 7), (1, -3)
A) Yes B) No

Answer: A

282) Decide whether or not the points are the vertices of a rectangle.
(-10, -4), (-1, -18), (13, -9), (4, 5)
A) Yes B) No

Answer: A

283) Decide whether or not the points are the vertices of a square.
(-10, -6), (-8, 4), (7, 9), (4, 1)
A) No B) Yes

Answer: A

284) Decide whether or not the points are the vertices of a rhombus.
(-7, -1), (2, -10), (16, -3), (7, 8)
A) Yes B) No

Answer: B

285) Fahrenheit temperature F is a linear function of Celsius temperature C. The ordered pair (0, 32) is an ordered pair of this function because 0°C is equivalent to 32°F, the freezing point of water. The ordered pair (100, 212) is also an ordered pair of this function because 100°C is equivalent to 212°F, the boiling point of water. Use the two given points and the point-slope formula to write F as a function of C. Find the Fahrenheit temperature of the inside of a car that is 15° C.
A) $F = \frac{5}{9}C + 32$; 46.7°F B) $F = \frac{9}{5}C - 32$; 50°F C) $F = \frac{9}{5}C + 32$; 59°F D) $F = \frac{5}{9}C - 32$; 54.3°F

Answer: C

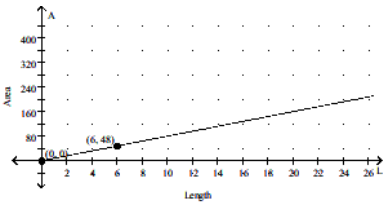
286) A faucet is used to add water to a large bottle that already contained some water. After it has been filling for 5 seconds, the gauge on the bottle indicates that it contains 28 ounces of water. After it has been filling for 13 seconds, the gauge indicates the bottle contains 68 ounces of water. Let w be the amount of water in the bottle t seconds after the faucet was turned on. Write a linear equation that models the amount of water in the bottle in terms of x.
A) $w = 5t + 55$ B) $w = \frac{1}{5}t + 27$ C) $w = -5t + 53$ D) $w = 5t + 3$

Answer: D

287) A driver wants to gauge the fuel efficiency of her vehicle at speeds of 30 mph and above. She notices that traveling at an average speed of 45 mph results in a rating of 35 mpg, whereas, at an average speed of 60 mph, her car rates 25 mpg. Find an equation to model the gas mileage, m, as a function of average speed s mph.
A) $m = -\frac{2}{3}s + 65$ B) $m = -\frac{2}{3}s - 5$ C) $m = \frac{3}{2}s - 5$ D) $m = \frac{3}{2}s + 65$

Answer: A

288) The graph shows the relationship between the area A of a rectangle and the length L, if the width is fixed. Find a formula for that function.



A) A = 8L B) A = 2L C) A = 48L D) A = 6L

Answer: A

289) At $10 per ticket, the Casper Coyotes will fill all 7000 seats in the assembly hall. The manager knows that for every $1 increase in the price, 100 tickets will go unsold. Write the number of tickets sold, n, as a function of the ticket price, p. How much money will be taken in if the tickets are $15 each? Hint: Find the equation of the line through (10, 7000), (11, 6900), (12, 6800), etc.

A) n = -200p - 15,000; -$18,000 B) n = -100p - 7100, -$8600

C) n = -100p + 8000; 6500 D) n = 200p + 1700; $4700

Answer: C

290) An office manager will spend a total of $20,000 on copiers at $2000 each and boxes of paper at $50 each. Write the number of copiers purchased, c, as a function of the number of boxes of paper purchased, b. Find and interpret the slope. Hint: Start with standard form.

A) $c = -\frac{200}{5}b + 10$; If b increases by 5, then c decreases by 200.

B) $c = -\frac{5}{200}b + 10$; If b increases by 200, then c decreases by 5.

C) $c = \frac{5}{200}b + 10$; If b decreases by 200, then c increases by 5.

D) $c = \frac{200}{5}b + 10$; If b decreases by 5, then c increases by 200.

Answer: B

291) Find all points on the line through (-1, 7) and (15, -1) that lie between these two points and have integral coordinates.

A) (1, 7), (4, 5), (7, 3), (10, 1), and (13,0)

B) (1, 6), (3, 5), (5, 4), (7, 3), (9, 2), (11, 1), and (13, 0)

C) (0, 5), (1, 4), (2, 3) (3, 2), (4, 1), (5, 2), (6, 3), and (7, 4)

D) (3, 5), (7, 3), (11, 1) and (14, 0)

Answer: B

The distance d from the point (x_1, y_1) to the line $Ax + By = C$ is given by the formula $d = \frac{|Ax_1 + By_1 - C|}{\sqrt{A^2 + B^2}}$. Find the exact distance from the given point to the given line.

292) (-7, 3), 6x + 8y = 3

A) $\frac{21}{5}$ B) $\frac{3}{2}$ C) $\frac{21}{10}$ D) 3

Answer: C

293) (-6, 3), 3x - 4y = 4

A) $\frac{2}{5}$ B) 2 C) $\frac{26}{5}$ D) $\frac{34}{5}$

Answer: D

294) (3, 6), y = 5x - 8

A) $\frac{13\sqrt{26}}{26}$ B) $\frac{29\sqrt{26}}{26}$ C) $\frac{17\sqrt{26}}{26}$ D) $\frac{1\sqrt{26}}{26}$

Answer: D

295) (-5, 7), y = -2x + 3

A) $\frac{0\sqrt{5}}{5}$ B) $\frac{14\sqrt{5}}{5}$ C) $\frac{6\sqrt{5}}{5}$ D) $\frac{20\sqrt{5}}{5}$

Answer: C

Use the scatter diagram to determine whether there is a linear relationship, a nonlinear relationship, or no relationship between the variables.

296)

A) Nonlinear B) No relationship C) Linear

Answer: C

297)

A) Linear B) No relationship C) Nonlinear

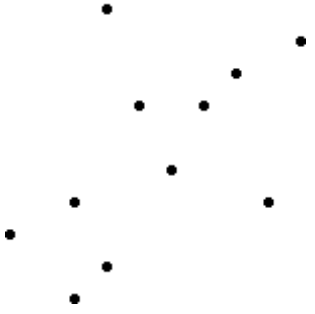
Answer: A

298)

A) Nonlinear B) No relationship C) Linear

Answer: A

299)



A) Linear B) No relationship C) Nonlinear

Answer: B

Determine whether there is a linear relationship between the variables in the table.

300)

Age (years)	18	23	20	26	29	16	25	20	32
Grade Point Average	2.5	3.0	2.7	3.2	3.9	2.0	3.5	3.1	3.6

A) Yes B) No

Answer: A

301)

Height (inches)	57	60	72	59	63	65	66	68	61
Time (seconds)	32.9	40.1	35.7	41.8	47.4	37.3	39.1	41.5	32.8

A) No B) Yes

Answer: A

302)

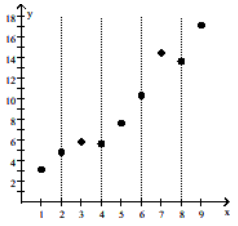
Foot Length (cm)	29	31	33	26	28	37	25	30	32
Forearm Length (cm)	30	30	33	25	28	37	24	31	31

A) Yes B) No

Answer: A

Draw a line that you think fits the data, and then use the line to determine the unknown quantity.

303)

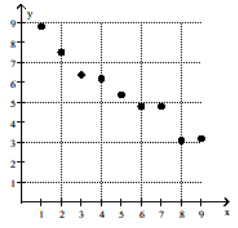


y(1.7) = ?

A) 1.9 B) 3.5 C) 6.5 D) 5.5

Answer: B

304)



y(?) = 6.3

A) 3.9 B) 7.2 C) 1.7 D) 0.8

Answer: A

Solve the problem using your calculator.

305) Ten students in a graduate program were randomly selected. Their grade point averages (GPAs) when they entered the program were between 3.5 and 4.0. The following data were obtained regarding their GPAs on entering the program versus their current GPAs. Use linear regression to find a linear function that predicts a student's current GPA as a function of his or her entering GPA.

Entering GPA	Current GPA
3.5	3.6
3.8	3.7
3.6	3.9
3.6	3.6
3.5	3.9
3.9	3.8
4.0	3.7
3.9	3.9
3.5	3.8
3.7	4.0

A) y = 3.67 + 0.0313x B) y = 2.51 + 0.329x C) y = 5.81 + 0.497x D) y = 4.91 + 0.0212x

Answer: A

306) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. Use linear regression to find a linear function that predicts a student's score as a function of the number of hours he or she studied.

Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

A) y = 67.3 + 1.07x B) y = 33.7 - 2.14x C) y = 33.7 +2.14x D) y = -67.3 + 1.07x

Answer: A

307) The paired data below consist of the costs of advertising (in thousands of dollars) and the number of products sold (in thousands). Use linear regression to find a linear function that predicts the number of products sold as a function of the cost of advertising.

Cost	9	2	3	4	2	5	9	10
Number	85	52	55	68	67	86	83	73

A) y = 26.4 + 1.42x B) y = -26.4 - 1.42x C) y = 55.8 + 2.79x D) y = 55.8 - 2.79x

Answer: C

308) The paired data below consist of the temperatures on randomly chosen days and the amount a certain kind of plant grew (in millimeters). Use linear regression to find a linear function that predicts a plant's growth as a function of temperature.

Temp	62	76	50	51	71	46	51	44	79
Growth	36	39	50	13	33	33	17	6	16

A) y = 14.6 + 0.211x B) y = -14.6 - 0.211x C) y = 7.30 + 0.122x D) y = 7.30 - 0.112x

Answer: A

309) A study was conducted to compare the average time spent in the lab each week versus course grade for computer students. The results are recorded in the table below. Use linear regression to find a linear function that predicts a student's course grade as a function of the number of hours spent in lab.

Number of hours spent in lab	Grade (percent)
10	96
11	51
16	62
9	58
7	89
15	81
16	46
10	51

A) y = 88.6 - 1.86x B) y = 1.86 + 88.6x C) y = 44.3 + 0.930x D) y = 0.930 + 44.3x

Answer: A

310) Two separate tests are designed to measure a student's ability to solve problems. Several students are randomly selected to take both tests and the results are shown below. Use linear regression to find a linear function that predicts a student's score on Test B as a function of his or her score on Test A.

Test A	48	52	58	44	43	43	40	51	59
Test B	73	67	73	59	58	56	58	64	74

A) y = -19.4 - 0.930x B) y = 0.930 - 19.4x C) y = -0.930 + 19.4x D) y = 19.4 + 0.930x

Answer: D

Solve the problem.

311) Ten students in a graduate program were randomly selected. Their grade point averages (GPAs) when they entered the program were between 3.5 and 4.0. The following data were obtained regarding their GPAs on entering the program versus their current GPAs. By using linear regression, the following function is obtained: y = 3.67 + 0.0313x where x is entering GPA and y is current GPA. Use this function to predict current GPA of a student whose entering GPA is 3.6.

Entering GPA	Current GPA
3.5	3.6
3.8	3.7
3.6	3.9
3.6	3.6
3.5	3.9
3.9	3.8
4.0	3.7
3.9	3.9
3.5	3.8
3.7	4.0

A) 3.78 B) 3.40 C) 3.58 D) 3.29

Answer: A

312) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. By using linear regression, the following function is obtained: y = 67.3 + 1.07x where x is number of hours studied and y is score on the test. Use this function to predict the score on the test of a student who studies 10 hours.

Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

A) 82.3 B) 73.0 C) 83.0 D) 78.0

Answer: D

313) The paired data below consist of the costs of advertising (in thousands of dollars) and the number of products sold (in thousands). By using linear regression, the following function is obtained: y = 55.8 + 2.79x where x is the cost of advertising (in thousands of dollars) and y is number of products sold (in thousands). Use this function to predict the number of products sold (in thousands of dollars) if the cost of advertising is $11,000.

Cost	9	2	3	4	2	5	9	10
Number	85	52	55	68	67	86	83	73

A) 86.49 B) 93.19 C) 30,745.8 D) 83.49

Answer: A

314) The paired data below consist of the temperatures on randomly chosen days and the amount a certain kind of plant grew (in millimeters). By using linear regression, the following function is obtained: y = 14.6 + 0.211x where x is temperature and y is growth in millimeters. Use this function to predict the growth of a plant if the temperature is 58.

Temp	62	76	50	51	71	46	51	44	79
Growth	36	39	50	13	33	33	17	6	16

A) 27.77 B) 27.30 C) 26.84 D) 25.62

Answer: C

315) A study was conducted to compare the average time spent in the lab each week versus course grade for computer students. The results are recorded in the table below. By using linear regression, the following function is obtained: y = 88.6 - 1.86x where x is the number of hours spent in the lab and y is grade on the test. Use this function to predict the grade of a student who spends 13 hours in the lab.

Number of hours spent in lab	Grade (percent)
10	96
11	51
16	62
9	58
7	89
15	81
16	46
10	51

A) 67.0 B) 60.4 C) 64.4 D) 75.6

Answer: C

Identify the complex number as real or imaginary.

316) $-4i$

A) Imaginary B) Real

Answer: A

317) 7π

A) Imaginary B) Real

Answer: B

318) $-3 + 10i$

A) Imaginary B) Real

Answer: A

319) $-\sqrt{-4}$

A) Imaginary B) Real

Answer: A

320) $-\sqrt{9}$

A) Imaginary B) Real

Answer: B

321) $i\sqrt{8}$

A) Imaginary B) Real

Answer: A

322) $\pi - 2$

A) Real B) Imaginary

Answer: A

323) $4i + \sqrt{6}$

A) Real B) Imaginary

Answer: B

324) $\frac{3 - i}{2}$

A) Real B) Imaginary

Answer: B

Perform the indicated operations and write the answer in the form a + bi, where a and b are real numbers.

325) $(7 - 6i) + (4 + 4i)$

A) $3 + 10i$ B) $-11 + 2i$ C) $11 + 2i$ D) $11 - 2i$

Answer: D

326) $4i + (-9 - i)$

A) $-9 + 5i$ B) $9 - 3i$ C) $9 - 5i$ D) $-9 + 3i$

Answer: D

327) $(7 + 5i) - (-5 + i)$

A) $2 + 6i$ B) $12 - 4i$ C) $-12 - 4i$ D) $12 + 4i$

Answer: D

328) $(-5 + 7i) - 3$

A) $8 - 7i$ B) $-2 + 7i$ C) $-2 - 7i$ D) $-8 + 7i$

Answer: D

329) $(5 - 9i) + (-2 + 3i) + 2i$

A) $3 + 4i$ B) $7 - 6i$ C) $5 - 4i$ D) $3 - 4i$

Answer: D

330) $7i + (-4 - i)$

A) $-4 + 6i$ B) $4 - 6i$ C) $-4 + 8i$ D) $4 - 8i$

Answer: A

331) $(6 + 8i) - (-4 + i)$

A) $2 + 9i$ B) $10 - 7i$ C) $10 + 7i$ D) $-10 - 7i$

Answer: C

332) $(5 - 3i\sqrt{5}) + (4 + 6i\sqrt{5})$

A) $9 + 9i\sqrt{5}$ B) $12i\sqrt{5}$ C) $9 + 3i\sqrt{5}$ D) $18i\sqrt{5}$

Answer: C

333) $\left(\frac{2}{3} - \frac{3}{5}i\right) - \left(2 - \frac{2}{4}i\right)$

A) $-\frac{4}{3} - \frac{1}{10}i$ B) $-\frac{4}{3} + \frac{1}{10}i$ C) $-\frac{4}{3} + \frac{11}{10}i$ D) $-\frac{4}{3} - \frac{11}{10}i$

Answer: A

334) $7i(6 - 7i)$

A) $49 + 42i$ B) $42i - 49i^2$ C) $42i - 49$ D) $42i + 49i^2$

Answer: A

335) $(7 + 8i)(4 + 7i)$

A) $84 - 17i$ B) $-28 - 81i$ C) $-28 + 81i$ D) $56i^2 + 81i + 28$

Answer: C

336) $(9 + 5i)(6 + 2i)$

A) $10i^2 + 48i + 54$ B) $44 - 48i$ C) $44 + 48i$ D) $64 + 12i$

Answer: C

337) $(9 + 4i)(9 - 3i)$

A) $93 - 9i$ B) $69 + 63i$ C) $-12i^2 + 9i + 81$ D) $93 + 9i$

Answer: D

338) $(6 - 8i)(2 - 2i)$

A) $-4 + 28i$ B) $28 - 4i$ C) $-4 - 28i$ D) $16i^2 - 28i + 12$

Answer: C

339) $(4 - 2i)(4 + 2i)$

A) $16 + 4i^2$ B) $16 - 4i^2$ C) 12 D) 20

Answer: D

340) $(\sqrt{7} - 9i)(\sqrt{7} + 9i)$

A) 16 B) $7 + 81i$ C) 88 D) $7 - 81i$

Answer: C

341) $(1 - 8i)^2$

A) $1 + 64i$ B) $65 - 16i$ C) $1 - 64i$ D) $-63 - 16i$

Answer: D

Evaluate the indicated power of i.

342) i^{24}

A) -1 B) $-i$ C) 1 D) i

Answer: C

343) i^{19}

A) -1 B) 1 C) $-i$ D) i

Answer: C

344) i^{52}

A) -1 B) i C) 1 D) $-i$

Answer: C

345) i^{50}

A) i B) $-i$ C) 1 D) -1

Answer: D

346) i^{61}

A) 1 B) -1 C) i D) $-i$

Answer: C

347) i^{67}

A) $-i$ B) 1 C) -1 D) i

Answer: A

348) i^{-18}

A) $-i$ B) 1 C) i D) -1

Answer: D

349) i^{-11}

A) -1 B) 1 C) -i D) i

Answer: D

Find the product of the complex number and its conjugate.

350) 2 + 3i

A) 13 B) 4 - 9i C) -5 D) 4 + 9i

Answer: A

351) 4 - 6i

A) 16 + 36i B) 16 - 36i C) 52 D) -20

Answer: C

352) -7 + 3i

A) 61 B) 59 C) 58 D) 40

Answer: C

353) -4 - 2i

A) 23 B) 21 C) 20 D) 12

Answer: C

354) $-5 + i\sqrt{7}$

A) 74 B) 32 C) -24 D) 18

Answer: B

355) $6 + i\sqrt{3}$

A) 33 B) 45 C) 39 D) 27

Answer: C

356) $-5 - i\sqrt{6}$

A) -11 B) 19 C) 61 D) 31

Answer: D

357) -i

A) 1 B) -i C) -1 D) i

Answer: A

358) $i\sqrt{2}$

A) $\sqrt{2}$ B) $-\sqrt{2}$ C) -2 D) 2

Answer: D

Write the quotient in the form a + bi.

359) $\frac{8 + 2i}{6 - 9i}$

A) $-\frac{2}{9} + \frac{28}{45}i$ B) $-\frac{22}{15} + \frac{28}{45}i$ C) $\frac{10}{39} + \frac{28}{39}i$ D) $\frac{22}{13} + \frac{20}{13}i$

Answer: C

360) $\frac{6 + 3i}{5 + 2i}$

A) $\frac{24}{29} - \frac{27}{29}i$ B) $\frac{12}{7} - \frac{1}{7}i$ C) $\frac{36}{29} + \frac{3}{29}i$ D) $\frac{8}{7} - \frac{1}{7}i$

Answer: C

361) $\frac{8 - 3i}{5 + 3i}$

A) $\frac{31}{16} + \frac{39}{16}i$ B) $\frac{49}{34} - \frac{9}{34}i$ C) $\frac{49}{16} + \frac{39}{16}i$ D) $\frac{31}{34} - \frac{39}{34}i$

Answer: D

362) $\frac{8 - 4i}{5 - 9i}$

A) $\frac{4}{53} + \frac{92}{53}i$ B) $\frac{38}{53} + \frac{26}{53}i$ C) $-\frac{19}{28} + \frac{13}{28}i$ D) $-\frac{1}{14} + \frac{13}{28}i$

Answer: B

363) $\frac{7 + 3i}{3 - 6i}$

A) $\frac{1}{15} + \frac{17}{15}i$ B) $-\frac{13}{9} + \frac{17}{27}i$ C) $-\frac{1}{27} + \frac{17}{27}i$ D) $\frac{13}{5} + \frac{11}{5}i$

Answer: A

364) $\frac{8 + 4i}{6 + 7i}$

A) $-\frac{20}{13} - \frac{32}{13}i$ B) $\frac{4}{17} - \frac{16}{17}i$ C) $-\frac{76}{13} - \frac{32}{13}i$ D) $\frac{76}{85} - \frac{32}{85}i$

Answer: D

365) $\frac{-5 + 3i}{i}$

A) $-2i$ B) $3 - 5i$ C) $8i$ D) $3 + 5i$

Answer: D

366) $\frac{-8i}{4 - i}$

A) $\frac{8}{17} + \frac{32}{17}i$ B) $\frac{8}{17} - \frac{32}{17}i$ C) $\frac{8}{15} - \frac{32}{15}i$ D) $\frac{8}{15} + \frac{32}{15}i$

Answer: B

Write the expression in the form a + bi, where a and b are real numbers.

367) $\sqrt{-25} + \sqrt{-4}$

A) 10i B) 3i C) 7i D) -7

Answer: C

368) $(\sqrt{-3})^2$

A) 9i B) 3i C) -3 D) 3

Answer: C

369) $\frac{-8 + \sqrt{-5}}{4}$

A) -2 - 5 B) $-2 - \frac{\sqrt{5}}{4}i$ C) $2 + \frac{\sqrt{5}}{4}i$ D) $-2 + \frac{\sqrt{5}}{4}i$

Answer: D

370) $-5 + \sqrt{4^2 - 3(4)(2)}$

A) $5 - 2i\sqrt{2}$ B) $-5 - 2i\sqrt{2}$ C) $-5 + 2i\sqrt{2}$ D) $5 + 2i\sqrt{2}$

Answer: C

Evaluate the expression $\frac{-b + \sqrt{b^2 - 4ac}}{2a}$ for each choice of a, b, and c.

371) a = 1, b = 0, c = 25

A) i B) 5 C) 25i D) 5i

Answer: D

372) a = 1, b = 0, c = 216

A) $6i\sqrt{6}$ B) $6\sqrt{6}$ C) $12i\sqrt{6}$ D) $i\sqrt{6}$

Answer: A

373) a = 1, b = -10, c = 61

A) 5 + 6i B) 11 C) -5 + 6i D) 10 + 12i

Answer: A

374) a = 1, b = 1, c = 2

A) $\frac{1}{2} + \frac{\sqrt{7}}{2}i$ B) $-\frac{1}{2} + \frac{\sqrt{7}}{2}i$ C) $\frac{1}{2} - \frac{\sqrt{7}}{2}$ D) $-\frac{1}{2} - \frac{\sqrt{7}}{2}$

Answer: B

375) $4x^2 + 3 = x$

A) $\sqrt{6}$ B) $\frac{1}{4} + \frac{\sqrt{47}}{4}i$ C) $\frac{1}{8} + \frac{\sqrt{47}}{8}i$ D) $1 - \sqrt{47}$

Answer: C

Solve the equation by factoring.

376) $x^2 + 8x + 7 = 0$

A) [-1, 7} B) {8, 7} C) {1, 7} D) {-7, -1}

Answer: D

377) $y^2 + 2y = 15$

A) {3, 5} B) {-3, -5} C) {3, -5} D) {5, -3}

Answer: C

378) $10 - n^2 = 3n$

A) {2, 5} B) {2, -5} C) {5, -2} D) {-5, -2}

Answer: B

379) $21 - x^2 + 4x = 0$

A) {3, -7} B) {7, -3} C) {7, 3} D) {-3, -7}

Answer: B

380) $(x + 10)(x - 4) = -13$

A) {-9, 3} B) {3, 9} C) {10, -4} D) {-10, 4}

Answer: A

381) $x^2 - x = 20$

A) {4, 5} B) {-4, 5} C) {-4, -5} D) {1, 20}

Answer: B

382) $x^2 + 9x - 22 = 0$

A) {-11, 2} B) {-11, 1} C) {11, -2} D) {11, 2}

Answer: A

383) $5x^2 + 19x - 4 = 0$

A) $\{-5, 4\}$ B) {1, -4} C) $\left\{\frac{1}{5}, -4\right\}$ D) $\left\{-\frac{1}{5}, 4\right\}$

Answer: C

384) $49x^2 + 28x - 32 = 0$

A) $\left\{\frac{4}{7}, -\frac{8}{7}\right\}$ B) $\left\{-\frac{8}{49}, -\frac{24}{49}\right\}$ C) $\left\{-\frac{4}{7}, \frac{8}{7}\right\}$ D) $\left\{\frac{4}{49}, -\frac{8}{49}\right\}$

Answer: A

Use the square root property to find all real or imaginary solutions to the equation.

385) $x^2 = 49$

A) {7} B) {±8} C) {24.5} D) {±7}

Answer: D

386) $x^2 - 144 = 0$

A) {12} B) {±12} C) {±11} D) {74}

Answer: B

387) $6z^2 - 726 = 0$

A) {11} B) {±11} C) {±12} D) {364.5}

Answer: B

388) $-3k^2 + 12 = 0$

A) {±4} B) {-11.5} C) {±2} D) {2}

Answer: C

389) $y^2 = 18$

A) $\{\pm 3\sqrt{2}\}$ B) $\{\sqrt{18}\}$ C) $\{324\}$ D) $\{9\}$

Answer: A

390) $(x - 14)^2 = 36$

A) $\{-22\}$ B) $\{20\}$ C) $\{-8, -20\}$ D) $\{8, 20\}$

Answer: D

391) $(p + 3)^2 = 11$

A) $\{\pm\sqrt{11} + 3\}$ B) $\{-3 \pm i\sqrt{11}\}$ C) $\{\sqrt{11} - \sqrt{3}\}$ D) $\{-3 \pm \sqrt{11}\}$

Answer: D

392) $(8s + 7)^2 = 16$

A) $\left\{-\frac{3}{8}i, -\frac{11}{8}i\right\}$ B) $\left\{-\frac{3}{8}, 0\right\}$ C) $\left\{\frac{3}{8}, \frac{11}{8}\right\}$ D) $\left\{-\frac{3}{8}, -\frac{11}{8}\right\}$

Answer: D

393) $x^2 + 121 = 0$

A) {60.5} B) {±11i} C) {±11} D) {11}

Answer: B

394) $(x + 16)^2 = -5$

A) $\{-16 \pm i\sqrt{5}\}$ B) $\{-16 \pm \sqrt{5}\}$ C) {-11, 21} D) $\{-4 - \sqrt{5}\}$

Answer: A

Find the perfect square trinomial whose first two terms are given.

395) $x^2 + 14x$

A) $x^2 + 14x + 196$ B) $x^2 + 14x + 7$ C) $x^2 + 14x + 14$ D) $x^2 + 14x + 49$

Answer: D

396) $x^2 - 12x$

A) $x^2 - 12x - 36$ B) $x^2 - 12x + 6$ C) $x^2 - 12x + 36$ D) $x^2 - 12x + 144$

Answer: C

397) $x^2 + \frac{1}{4}x$

A) $x^2 + \frac{1}{4}x + \frac{1}{8}$ B) $x^2 + \frac{1}{4}x + 64$ C) $x^2 + \frac{1}{4}x + \frac{1}{64}$ D) $x^2 + \frac{1}{4}x + \frac{1}{16}$

Answer: C

398) $x^2 - \frac{2}{7}x$

A) $x^2 - \frac{2}{7}x + \frac{4}{49}$ B) $x^2 - \frac{2}{7}x + \frac{2}{49}$ C) $x^2 - \frac{2}{7}x + \frac{1}{49}$ D) $x^2 - \frac{2}{7}x + \frac{1}{7}$

Answer: C

399) $x^2 + \frac{2}{11}x$

A) $x^2 + \frac{2}{11}x + \frac{4}{121}$ B) $x^2 + \frac{2}{11}x + \frac{1}{11}$ C) $x^2 + \frac{2}{11}x + \frac{2}{121}$ D) $x^2 + \frac{2}{11}x + \frac{1}{121}$

Answer: D

400) $x^2 + 11x$

A) $x^2 + 11x + \frac{11}{4}$ B) $x^2 + 11x + \frac{11}{2}$ C) $x^2 + 11x + \frac{121}{2}$ D) $x^2 + 11x + \frac{121}{4}$

Answer: D

Find the real or imaginary solutions by completing the square.

401) $a^2 + 12a + 11 = 0$

A) {22, -11} B) {1, 11} C) {-1, -11} D) $\{\pm\sqrt{11}\}$

Answer: C

402) $z^2 + 10z + 3 = 0$

A) $\{-5 \pm \sqrt{22}\}$ B) $\{5 + \sqrt{22}\}$ C) $\{-10 + \sqrt{22}\}$ D) $\{5 \pm \sqrt{22}\}$

Answer: A

403) $p^2 + 3p - 9 = 0$

A) $\left\{\frac{3 + 3\sqrt{5}}{2}\right\}$ B) $\left\{\frac{-3 \pm 3\sqrt{5}}{2}\right\}$ C) $\{-3 \pm 3\sqrt{5}\}$ D) $\left\{\frac{-3 - 3\sqrt{5}}{2}\right\}$

Answer: B

404) $9x^2 + 6x - 3 = 0$

A) {3, -1} B) {3, 1} C) {3, 0} D) $\left\{\frac{1}{3}, -1\right\}$

Answer: D

405) $7m^2 + 12m = 0$

A) $\left\{\pm\frac{12}{7}\right\}$ B) {0} C) $\left\{-\frac{12}{7}, 0\right\}$ D) $\left\{\frac{12}{7}, 0\right\}$

Answer: C

406) $x^2 + 4x + 53 = 0$

A) $\{-2 \pm 7i\}$ B) $\{2 \pm 7i\}$ C) {5, -9} D) $\{-2 \pm i\sqrt{53}\}$

Answer: A

407) $x^2 + 4x + 40 = 0$

A) $\{-2 \pm 2\sqrt{10}\}$ B) $\{-2 \pm 6i\}$ C) $\{2 \pm 6i\}$ D) {4, -8}

Answer: B

Find the real or imaginary solutions by using the quadratic formula.

408) $x^2 - x = 6$

A) $\{-2, -3\}$ B) $\{-2, 3\}$ C) $\{1, 6\}$ D) $\{2, 3\}$

Answer: B

409) $x^2 + 3x - 54 = 0$

A) $\{9, -6\}$ B) $\{-9, 1\}$ C) $\{-9, 6\}$ D) $\{9, 6\}$

Answer: C

410) $3x^2 - 18x + 24 = 0$

A) $\{0, 2, 4\}$ B) $\{2, 4\}$ C) $\{-2, -4\}$ D) $\{2i, 4i\}$

Answer: B

411) $20x^2 + 41x + 20 = 0$

A) $\left\{-\frac{4}{5}, -\frac{5}{4}\right\}$ B) $\left\{-\frac{1}{5}, -\frac{1}{4}\right\}$ C) $\left\{\frac{4}{5}, \frac{5}{4}\right\}$ D) $\left\{\frac{4}{5}, -\frac{5}{4}\right\}$

Answer: A

412) $4m^2 + 8m + 2 = 0$

A) $\left\{\frac{-2 \pm \sqrt{2}}{8}\right\}$ B) $\left\{\frac{-2 \pm \sqrt{2}}{2}\right\}$ C) $\left\{\frac{-8 \pm \sqrt{2}}{2}\right\}$ D) $\left\{\frac{-2 \pm \sqrt{6}}{2}\right\}$

Answer: B

413) $2n^2 = -6n - 3$

A) $\left\{\frac{-3 \pm \sqrt{15}}{2}\right\}$ B) $\left\{\frac{-3 \pm \sqrt{3}}{2}\right\}$ C) $\left\{\frac{-6 \pm \sqrt{3}}{2}\right\}$ D) $\left\{\frac{-3 \pm \sqrt{3}}{4}\right\}$

Answer: B

414) $6x^2 + 8x = -1$

A) $\left\{\frac{-4 \pm i\sqrt{10}}{6}\right\}$ B) $\left\{\frac{-8 \pm \sqrt{10}}{6}\right\}$ C) $\left\{\frac{-4 \pm \sqrt{10}}{12}\right\}$ D) $\left\{\frac{-4 \pm \sqrt{10}}{6}\right\}$

Answer: D

415) $x^2 = 7 - 4x$

A) $\{-1 \pm \sqrt{11}\}$ B) $\{-2 \pm \sqrt{11}\}$ C) $\{2 + \sqrt{11}\}$ D) $\{-2 \pm i\sqrt{11}\}$

Answer: B

416) $x^2 - 14x + 74 = 0$

A) $\{-7 \pm 5i\}$ B) $\{12, 2\}$ C) $\{7 \pm 5i\}$ D) $\{14 \pm 10i\}$

Answer: C

417) $x^2 + 35 = 5x$

A) $\{\pm 5\}$ B) $\{0, 5\}$ C) $\left\{\frac{5 \pm i\sqrt{115}}{2}\right\}$ D) $\left\{\frac{5 \pm 5i}{2}\right\}$

Answer: C

Find the real solutions for the given quadratic equation. Round results to two decimal places.

418) $3.7x^2 + 12.7x + 2.5 = 0$

A) $\{-3.22\}$ B) $\{0.21, 3.22\}$ C) No real solutions D) $\{-3.22, -0.21\}$

Answer: D

419) $6.6x^2 + 2.3x + 8.2 = 0$

A) $\{-1.30, 0.95\}$ B) No real solutions C) $\{-1.30\}$ D) $\{1.30, -0.95\}$

Answer: B

State the value of the discriminant and the number of real solutions.

420) $s^2 + 6s + 6 = 0$

A) 12, one B) 0, one C) -12, two D) 12, two

Answer: D

421) $t^2 - 10t + 25 = 0$

A) 0, one B) 200, two C) -200, two D) 200, one

Answer: A

422) $s^2 + 4s + 8 = 0$

A) 16, one B) 0, one

C) 16, two D) -16, no real solutions

Answer: D

423) $s^2 = -8s - 7$

A) 0, one B) 36, two C) -36, two D) 36, one

Answer: B

424) $6x^2 - 54 = 0$

A) 0, one B) -1296, two C) 1296, two D) 1296, one

Answer: C

425) $36x^2 + 12x + 1 = 0$

A) -72, two B) 72, two C) 72, one D) 0, one

Answer: D

426) $6y^2 = -6y - 2$

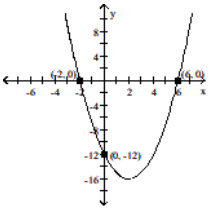
A) -12, no real solutions B) 12, two

C) 0, one D) 12, one

Answer: A

Find the solutions to the equation by reading the graph.

427) $x^2 - 4x - 12 = 0$

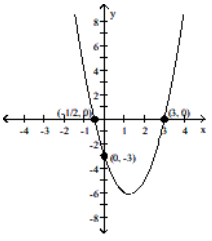


$y = x^2 - 4x - 12$

A) {-12, 0} B) {-12, 6} C) {-12, -2} D) {-2, 6}

Answer: D

428) $2x^2 - 5x - 3 = 0$

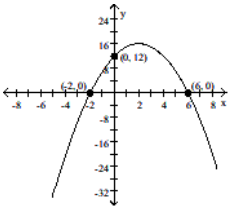


$y = 2x^2 - 5x - 3$

A) $\left\{-3, -\frac{1}{2}, 0\right\}$ B) $\left\{-\frac{1}{2}, 3\right\}$ C) $\{0, -3\}$ D) $\left\{-\frac{1}{2}, 0\right\}$

Answer: B

429) $-x^2 + 4x + 12 = 0$



$$y = -x^2 + 4x + 12$$

A) {12, 6} B) {12} C) {-2, 6, 12} D) {-2, 6}

Answer: D

For the equation in the form $ax^2 + bx + c = 0$, determine the number of real solutions by examining the graph of $y = ax^2 + bx + c$.

430) $x^2 + 3x - 33 = 0$

A) 1 B) 4 C) 0 D) 2

Answer: D

431) $x^2 + 3x + 18 = 0$

A) 0 B) 1 C) 2 D) 3

Answer: A

432) $-2x^2 + 8x - 12 = 0$

A) 0 B) Cannot be determined

C) 1 D) 2

Answer: A

433) $1.7x^2 + 6.46x - 3.655 = 0$

A) 2 B) 0

C) 1 D) Cannot be determined

Answer: A

Use the method of your choice to find all real solutions of the equation.

434) $10b^2 + 19b - 7 = -13$

A) $\left\{-\frac{2}{3}, -\frac{2}{5}\right\}$ B) $\left\{\frac{3}{2}, \frac{2}{5}\right\}$ C) $\left\{-\frac{3}{2}, -\frac{2}{5}\right\}$ D) $\left\{\frac{2}{3}, \frac{5}{2}\right\}$

Answer: C

435) $2k^2 - 13k - 7 = 0$

A) {-2, 7} B) $\left\{-\frac{1}{2}, 2\right\}$ C) $\left\{-\frac{1}{2}, 7\right\}$ D) $\left\{\frac{1}{13}, -\frac{1}{2}\right\}$

Answer: C

436) $(p + 3)^2 = 19$

A) $\{-3 \pm \sqrt{19}\}$ B) $\{\sqrt{19} - 3\}$ C) $\{\sqrt{19} - \sqrt{3}\}$ D) $\{3 \pm \sqrt{19}\}$

Answer: A

437) $(6t + 6)^2 = 14$

A) $\{-6 \pm \sqrt{14}\}$ B) $\left\{\frac{6 + \sqrt{14}}{6}\right\}$ C) $\left\{\frac{-6 \pm \sqrt{14}}{6}\right\}$ D) $\left\{\frac{\pm\sqrt{8}}{6}\right\}$

Answer: C

438) $9k^2 - 4 = 0$

A) $\{2, 0\}$ B) $\left\{\frac{3}{2}, 0\right\}$ C) $\left\{\pm\frac{3}{2}\right\}$ D) $\left\{\pm\frac{2}{3}\right\}$

Answer: D

439) $6x^2 + 10x = -1$

A) $\left\{\frac{-5 \pm \sqrt{19}}{6}\right\}$ B) $\left\{\frac{-10 \pm \sqrt{19}}{6}\right\}$ C) $\left\{\frac{-5 \pm \sqrt{31}}{6}\right\}$ D) $\left\{\frac{-5 \pm \sqrt{19}}{12}\right\}$

Answer: A

440) $x = 2 + \frac{3}{x}$

A) $\left\{-\frac{2}{3}\right\}$ B) No real solutions C) $\{-3, -1\}$ D) $\{-1, 3\}$

Answer: D

441) $\frac{x + 4}{x - 7} = \frac{x - 3}{x + 1}$

A) $\left\{-\frac{1}{3}, \frac{1}{3}\right\}$ B) $\{-4, -1, 7, 3\}$ C) No real solutions D) $\left\{\frac{17}{15}\right\}$

Answer: D

442) $\frac{3}{4}x^2 + \frac{1}{2}x + \frac{1}{12} = 0$

A) $\left\{\frac{1}{9}\right\}$ B) $\left\{\frac{1}{3}\right\}$ C) $\left\{\frac{-6 \pm \sqrt{27}}{18}\right\}$ D) $\left\{-\frac{1}{3}\right\}$

Answer: D

443) $\frac{4}{9}x^2 - \frac{4}{3}x = -1$

A) $\left\{\frac{2}{3}\right\}$ B) $\left\{-\frac{3}{2}\right\}$ C) $\left\{\frac{3 \pm 2\sqrt{2}}{2}\right\}$ D) $\left\{\frac{3}{2}\right\}$

Answer: D

Solve for the indicated variable.

444) Solve for r.

$M = \pi r^2 hd$

A) $r = \frac{\pm\sqrt{M\pi hd}}{\pi hd}$ B) $r = \frac{\pm M\sqrt{\pi hd}}{\pi hd}$ C) $r = \frac{\pm\sqrt{\pi Mhd}}{hd}$ D) $r = \pm\sqrt{\pi Mhd}$

Answer: A

445) Solve for a.

$A = 2\pi a^2$

A) $a = \sqrt{2\pi A}$ B) $a = \frac{\pm A\sqrt{2\pi}}{2\pi}$ C) $a = \frac{\pm\sqrt{A\pi}}{2}$ D) $a = \frac{\pm\sqrt{2\pi A}}{2\pi}$

Answer: D

446) Solve for v.

$Ve = \frac{1}{2}mv^2$

A) $v = \frac{\pm\sqrt{2mVe}}{m}$ B) $v = \pm\sqrt{\frac{Ve}{2m}}$ C) $v = \pm 2\frac{\sqrt{Ve}}{m}$ D) $v = \pm\sqrt{2Ve}$

Answer: A

447) Solve for t.

$rm = t^2 - mt$

A) $t = \frac{m \pm \sqrt{m^2 + 4rm}}{2}$ B) $t = \frac{m \pm \sqrt{m^2 + 4mr}}{2m}$

C) $t = \sqrt{mr - m}$ D) $t = \frac{m \pm \sqrt{m^2 - 4mr}}{4}$

Answer: A

448) Solve for x.

$2x^2 - 4xy + 3y^2 = 1$

A) $x = -y \pm 2\sqrt{1 - y^2}$ B) $x = y \pm (1 - y)$ C) $x = -y \pm \sqrt{1 - y^2}$ D) $x = \frac{2y \pm \sqrt{2 - 2y^2}}{2}$

Answer: D

449) Solve for y.

$2x^2 - 4xy + 3y^2 = 1$

A) $y = \frac{2x \pm \sqrt{3 - 2x^2}}{3}$ B) $y = \frac{2x \pm 4\sqrt{3 - 2x^2}}{3}$

C) $y = \frac{2x \pm 2\sqrt{3 - 2x^2}}{3}$ D) $y = \frac{2x \pm \sqrt{6 - 4x^2}}{3}$

Answer: A

Solve the problem.

450) A ladder is resting against a wall. The top of the ladder touches the wall at a height of 15 ft. Find the length of the ladder if the length is 5 ft more than its distance from the wall.

A) 20 ft B) 25 ft C) 30 ft D) 15 ft

Answer: B

451) A lot is in the shape of a right triangle. The shorter leg measures 150 m. The hypotenuse is 50 m longer than the length of the longer leg. How long is the longer leg?

A) 150 m B) 200 m C) 250 m D) 300 m

Answer: B

452) The area of a square is 81 square centimeters. If the same amount is added to one dimension and removed from the other, the resulting rectangle has an area 9 square centimeters less than the area of the square. How much is added and subtracted?

A) 12 cm B) 3 cm C) 4 cm D) 9 cm

Answer: B

453) A square has an area of 49 square inches. If the same amount is added to the length and removed from the width, the resulting rectangle has an area of 45 square inches. Find the dimensions of the rectangle.

A) 4 in. by 9 in. B) 5 in. by 9 in. C) 3 in. by 4 in. D) 5 in. by 10 in.

Answer: B

454) An open box is to be made from a rectangular piece of tin by cutting two inch squares out of the corners and folding up the sides. The volume of the box will be 100 cubic inches. Find the dimensions of the rectangular piece of tin.

A) 5 in. by 10 in. B) 4 in. by 9 in.
C) 5 in. by 9 in. D) Not enough information

Answer: D

455) A rectangular garden has dimensions of 25 feet by 17 feet. A gravel path of consistent width is to be built around the garden. How wide can the path be if there is enough gravel for 400 square feet?

A) 6 ft B) 4 ft C) 5 ft D) 6.5 ft

Answer: B

456) A rug is to fit in a room so that a border of consistent width is left on all four sides. If the room is 12 feet by 15 feet and the area of the rug is 40 square feet, how wide will the border be?

A) 5.5 ft B) 4.5 ft C) 6 ft D) 3.5 ft

Answer: D

457) The position of an object moving in a straight line is given by $s = 2t^2 - 3t$, where s is in meters and t is the time in seconds the object has been in motion. How long (to the nearest tenth) will it take the object to move 20 meters?

A) 4.0 sec B) 3.8 sec C) 74.0 sec D) 21.0 sec

Answer: A

458) The position of an object moving in a straight line is given by $s = t^2 - 8t$, where s is in feet and t is the time in seconds the object has been in motion. How long (to the nearest tenth) will it take the object to move 18 feet?

A) 9.9 sec B) 19.0 sec C) 9.7 sec D) 18.0 sec

Answer: A

459) A ball is thrown downward from a window in a tall building. Its position at time t in seconds is $s = 16t^2 + 32t$, where s is in feet. How long (to the nearest tenth) will it take the ball to fall 187 feet?

A) 3.4 sec B) 2.6 sec C) 2.4 sec D) 6.8 sec

Answer: B

460) If an amount of money, called the principal, P, is deposited into an account that earns interest at a rate r, compounded annually, then in two years that investment will grow to an amount A, given by the formula $A = P(1 + r)^2$. If a principal amount of $4000 grows to $5198.40 in two years, what is the interest rate?

A) 14% B) 16% C) 12% D) 15%

Answer: A

461) The following table shows the height of a football at various times during a punt.

Time (seconds)	0.3	0.8	1.3	2	2.4	3	4
Height (feet)	20	40	56	70	80	65	20

Use a graphing calculator to find a quadratic regression curve that expresses the height in terms of the time. Use the regression equation to find the approximate number of seconds that it will take for the ball to reach the hands of the punt returner, who is 6' tall.

A) $y = -15.96x^2 + 70.21x - 3.51$; 4.26 seconds B) $y = -16.38x^2 + 71.45x - 2.52$; 4.24 seconds

C) $y = -16.38x^2 + 71.45x - 2.52$; -163.5 seconds D) $y = -15.96x^2 + 70.21x - 3.51$; -156.81 seconds

Answer: A

462) The demand equation for a certain product is $P = 65 - 0.002x$, where x is the number of units sold per week and P is the price in dollars at which one is sold. The weekly revenue R is given by $R = xP$. What number of units sold produces a weekly revenue of $80,000?

A) 1281 or 31,219 B) 1187 or 31,219 C) 1281 D) 31,219

Answer: A

463) A barge travels along a river between Metro City and Smithport, which are 50 miles apart. The speed of the current is 2.4 mph. If the barge can make the downstream trip in 5.9 hours less than it can travel the upstream trip, then what is the barge's speed in still water? Round your answer to one decimal place.

A) 6.8 mph B) 9.1 mph C) 5.4 mph D) 8.3 mph

Answer: A

464) Your company uses the quadratic model $y = -11x^2 + 350x$ to represent how many units (y) of a new product will be sold (x) weeks after its release . How many units can you expect to sell in week 18?

A) 9864 units B) 6498 units C) 2736 units D) 6102 units

Answer: C

465) Your company uses the quadratic model $y = -4.5x^2 + 150x$ to represent the average number of new customers who will be signed on (x) weeks after the release of your new service. How many new customers can you expect to gain in week 30?

A) 4365 customers B) 450 customers C) 225 customers D) -1800 customers

Answer: B

466) A grasshopper is perched on a reed 5 inches above the ground. It hops off the reed and lands on the ground about 7.9 inches away. During its hop, its height is given by the equation $h = -0.3x^2 + 1.75x + 5$, where x is the distance in inches from the base of the reed, and h is in inches. How far was the grasshopper from the base of the reed when it was 3.75 inches above the ground? Round to the nearest tenth.

A) 0.6 inches B) 6.5 inches C) 7.9 inches D) 0.8 inches

Answer: B

Write an inequality whose solution set is the interval.

467) $(-5, -3)$

A) $-5 \le x \le -3$ B) $-5 < x < -3$ C) $-5 < x > -3$ D) $-5 > x > -3$

Answer: B

468) $(-\infty, 8]$

A) $x < 8$ B) $x > 8$ C) $x \ge 8$ D) $x \le 8$

Answer: D

469) $[-2, 8)$

A) $-2 \le x < 8$ B) $-2 \le x \le 8$ C) $-2 < x > 8$ D) $-2 < x \le 8$

Answer: A

470) $(3, \infty)$

A) $x < 3$ B) $x > 3$ C) $x \le 3$ D) $x \ge 3$

Answer: B

471) $[17, \infty)$

A) $x \le 17$ B) $x < 17$ C) $x > 17$ D) $x \ge 17$

Answer: D

472) $(-\infty, 13)$

A) $x \le 13$ B) $x < 13$ C) $x \ge 13$ D) $x > 13$

Answer: B

Write the solution set in interval notation.

473) $x \ge -3$

A) $[-3, \infty)$ B) $(-3, \infty)$ C) $(-\infty, -3)$ D) $(-\infty, -3]$

Answer: A

474) $x < -27$

A) $(-\infty, -27)$ B) $[-27, \infty)$ C) $(-\infty, -27]$ D) $(-27, \infty)$

Answer: A

475) $x > \frac{\pi}{6}$

A) $(-\infty, \frac{\pi}{6}]$ B) $(-\infty, \frac{\pi}{6})$ C) $(\frac{\pi}{6}, \infty)$ D) $[\frac{\pi}{6}, \infty)$

Answer: C

476) $x \leq \sqrt{11}$

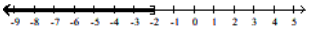
A) $(-\infty, \sqrt{11})$ B) $[\sqrt{11}, \infty)$ C) $(-\infty, \sqrt{11}]$ D) $(\sqrt{11}, \infty)$

Answer: C

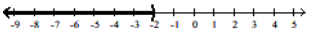
Solve the inequality. Write the solution set using interval notation and graph it.

477) $a - 5 < -7$

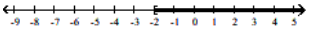
A) $(-\infty, -2]$



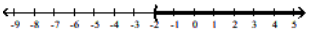
B) $(-\infty, -2)$



C) $[-2, \infty)$



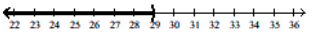
D) $(-2, \infty)$



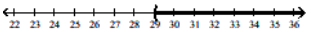
Answer: B

478) $10y + 10 > 9y + 19$

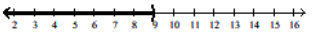
A) $(-\infty, 29)$



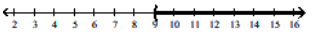
B) $(29, \infty)$



C) $(-\infty, 9)$



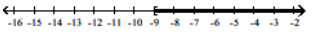
D) $(9, \infty)$



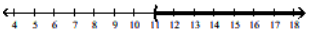
Answer: D

479) $11a + 1 \leq 10a - 8$

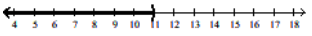
A) $[-9, \infty)$



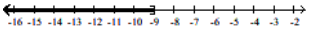
B) $(11, \infty)$



C) $(-\infty, 11)$



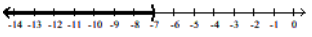
D) $(-\infty, -9]$



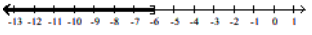
Answer: D

480) $-7y + 1 \geq -8y - 5$

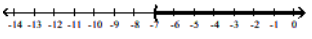
A) $(-\infty, -7)$



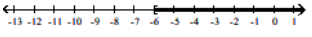
B) $(-\infty, -6]$



C) $(-7, \infty)$



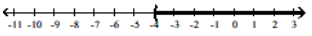
D) $[-6, \infty)$



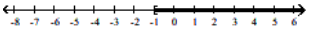
Answer: D

481) $-4z - 5 \geq -3z - 6$

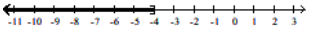
A) $(-4, \infty)$



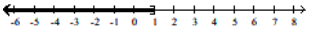
B) $[-1, \infty)$



C) $(-\infty, -4]$



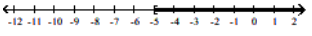
D) $(-\infty, 1]$



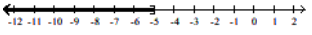
Answer: D

482) $-2 - 7y - 10 \geq -8y - 17$

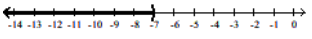
A) $[-5, \infty)$



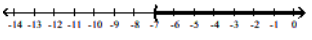
B) $(-\infty, -5]$



C) $(-\infty, -7)$



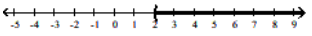
D) $(-7, \infty)$



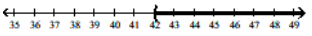
Answer: A

483) $42z + 42 > 6(6z + 9)$

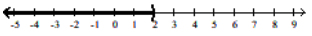
A) $(2, \infty)$



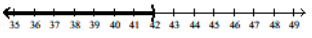
B) $(42, \infty)$



C) $(-\infty, 2)$



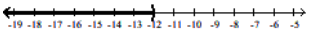
D) $(-\infty, 42)$



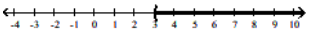
Answer: A

484) $-4(2x - 4) < -12x + 28$

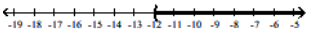
A) $(-\infty, -12)$



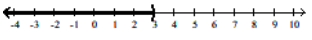
B) $(3, \infty)$



C) $(-12, \infty)$



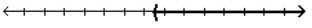
D) $(-\infty, 3)$



Answer: D

485) $\frac{8x - 2}{3} < \frac{13}{4}$

A) $\left(\frac{13}{4}, \infty\right)$

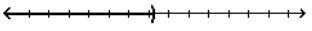


$\frac{13}{4}$

B) $\left(\frac{47}{32}, \infty\right)$

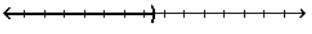
$\frac{47}{32}$

C) $\left(-\infty, \frac{13}{4}\right)$



$\frac{13}{4}$

D) $\left(-\infty, \frac{47}{32}\right)$

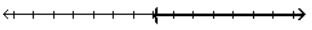


$\frac{47}{32}$

Answer: D

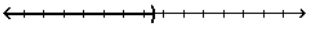
486) $\frac{8x - 4}{-9} < -\frac{17}{2}$

A) $\left(\frac{161}{16}, \infty\right)$



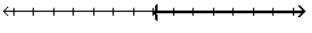
$\frac{161}{16}$

B) $\left(-\infty, -\frac{17}{2}\right)$



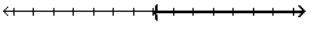
$-\frac{17}{2}$

C) $\left(\frac{161}{2}, \infty\right)$



$\frac{161}{2}$

D) $\left(-\frac{17}{16}, \infty\right)$

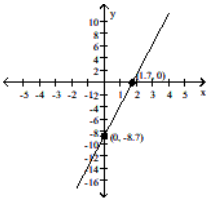


$-\frac{17}{16}$

Answer: A

Solve the inequality by reading the graph.

487) $5x - 8.7 > 0$

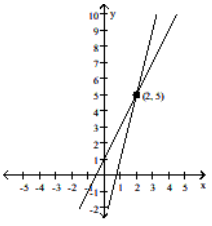


$y = 5x - 8.7$

A) $[1.7, \infty)$ B) $(1.7, \infty)$ C) $(-\infty, 1.7)$ D) $(-\infty, 1.7]$

Answer: B

488) $4x - 3 \geq 2x + 1$



$y = 2x + 1$ $y = 4x - 3$

A) $(2, \infty)$ B) $(-\infty, 2]$ C) $[2, \infty)$ D) $(-\infty, 2)$

Answer: C

Write as a single interval.

489) $[-3, \infty) \cup (4, \infty)$

A) $[-3, 4)$ B) $(4, \infty)$ C) $\emptyset$ D) $[-3, \infty)$

Answer: D

490) $(3, \infty) \cap (10, \infty)$

A) $\emptyset$ B) $(3, 10)$ C) $(3, \infty)$ D) $(10, \infty)$

Answer: D

491) $(-\infty, 1) \cap (5, \infty)$

A) $(1, \infty)$ B) $[1, 5]$ C) $(1, 5)$ D) $\emptyset$

Answer: D

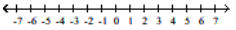
492) $(-\infty, 22) \cup (19, \infty)$

A) $\emptyset$ B) $(-\infty, \infty)$ C) $(19, 22)$ D) $(19, \infty)$

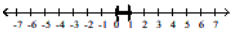
Answer: B

Solve the compound inequality. Write the solution set using interval notation and graph it.

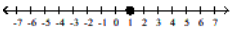
493) $5x - 1 < 4$ and $x - 2 > -1$



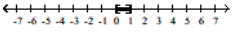
A) $(0, 1)$



B) $\{1\}$



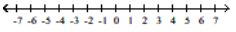
C) $[0, 1]$



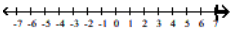
D) $\emptyset$

Answer: D

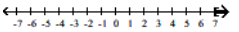
494) $4x - 10 \leq 18$ and $2x - 1 \geq 13$



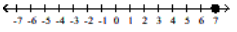
A) $(7, \infty)$



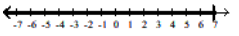
B) $[7, \infty)$



C) $\{7\}$

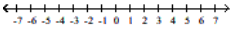


D) $(-\infty, 7)$

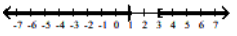


Answer: C

495) $6x - 4 < 2x$ or $-4x \leq -12$

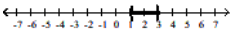


A) $(-\infty, 1) \cup [3, \infty)$

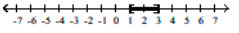


B) $\emptyset$

C) $(1, 3)$

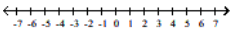


D) $[1, 3]$

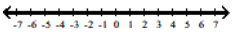


Answer: A

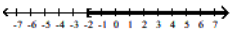
496) $-5x + 1 \geq 11$ or $7x + 3 \geq -25$



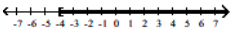
A) $(-\infty, \infty)$



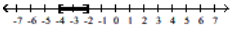
B) $[-2, \infty)$



C) $[-4, \infty)$

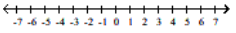


D) $[-4, -2]$

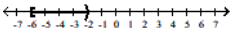


Answer: A

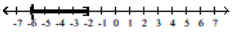
497) $-26 < 5b + 4 \leq -6$



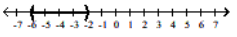
A) $[-6, -2)$



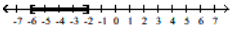
B) $(-6, -2]$



C) $(-6, -2)$

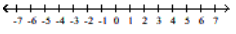


D) $[-6, -2]$

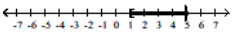


Answer: B

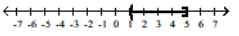
498) $-11 < -3a + 4 \leq 1$



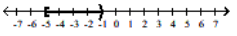
A) $[1, 5)$



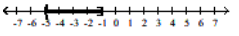
B) $(1, 5]$



C) $[-5, -1)$

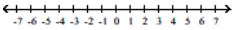


D) $(-5, -1]$

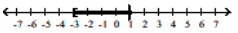


Answer: A

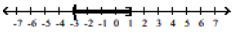
499) $0 < -3x + 3 \leq 12$



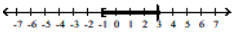
A) $[-3, 1)$



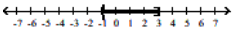
B) $(-3, 1]$



C) $[-1, 3)$

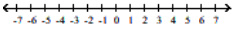


D) $(-1, 3]$

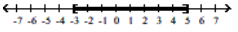


Answer: A

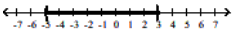
500) $-1 \leq \frac{x + 1}{2} \leq 3$



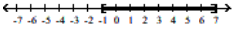
A) $[-3, 5]$



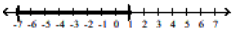
B) $[-5, 3]$



C) $[-1, 7]$



D) $(-7, 1)$



Answer: A

Solve the absolute value inequality. Write the solution set using interval notation.

501) $|x| \leq 14$

A) $(-\infty, 14]$ B) $[-14, 14]$ C) $(-\infty, -14]$ D) $(-\infty, -14] \cup [14, \infty)$

Answer: B

502) $|9x - 1| \geq 2$

A) $\left(-\infty, -\frac{1}{9}\right] \cup \left[\frac{1}{3}, \infty\right)$ B) $\left[-\frac{1}{9}, \frac{1}{3}\right]$ C) $\left(-\infty, -\frac{1}{3}\right] \cup [2, \infty)$ D) $\left[\frac{1}{3}, \infty\right)$

Answer: A

503) $|8x + 8| < 4$

A) $\left(-\infty, -\frac{3}{2}\right)$ B) $(-\infty, 8)$ C) $\left(-\frac{3}{2}, -\frac{1}{2}\right)$ D) $\left(-\infty, -\frac{3}{2}\right) \cup \left(-\frac{1}{2}, \infty\right)$

Answer: C

504) $|b + 7| - 5 > 18$

A) $(-30, 16)$ B) $(-\infty, -30) \cup (6, \infty)$ C) $(-\infty, -30) \cup (16, \infty)$ D) $(-\infty, -6) \cup (30, \infty)$

Answer: C

505) $5|x-2|<6$

A) $\left(-\infty, -\frac{16}{5}\right) \cup \left(-\frac{4}{5}, \infty\right)$ B) $\left(-\infty, \frac{4}{5}\right) \cup \left(\frac{16}{5}, \infty\right)$

C) $\left(\frac{4}{5}, \frac{16}{5}\right)$ D) $\left(-\frac{16}{5}, -\frac{4}{5}\right)$

Answer: C

506) $2|x-5| \geq 7$

A) $\left(-\infty, \frac{17}{2}\right] \cup \left[\frac{3}{2}, \infty\right)$ B) $\left(-\infty, -\frac{3}{2}\right] \cup \left[-\frac{17}{2}, \infty\right)$

C) $\left(\frac{17}{2}, \frac{3}{2}\right)$ D) $\left(-\infty, \frac{3}{2}\right] \cup \left[\frac{17}{2}, \infty\right)$

Answer: D

507) $\left|\frac{x-5}{3}\right| \geq 2$

A) $(-\infty, -1] \cup [11, \infty)$ B) $(-\infty, -1] \cap [11, \infty)$ C) $(-1, 11)$ D) $[-1, 11]$

Answer: A

508) $\left|\frac{7-2x}{7}\right| \leq 3$

A) $\left(-\infty, -7\right] \cup \left[14, \infty\right)$ B) $\left(-\infty, -7\right) \cap \left(14, \infty\right)$ C) $\left[-7, 14\right]$ D) $\emptyset$

Answer: C

509) $|11x-9| < -5$

A) $\emptyset$ B) $\left(-\infty, \frac{4}{11}\right) \cup \left(\frac{14}{11}, \infty\right)$ C) $\left(\frac{4}{11}, \frac{14}{11}\right)$ D) $(-\infty, \infty)$

Answer: A

510) $5 \leq |2x-6|$

A) $\left[\frac{1}{2}, \frac{11}{2}\right]$ B) $\left(-\infty, \frac{1}{2}\right] \cup \left[\frac{11}{2}, \infty\right)$ C) $\left[\frac{11}{2}, \infty\right)$ D) $\left(-\infty, -\frac{11}{2}\right] \cup [5, \infty)$

Answer: B

Write an inequality of the form $|x-a| < k$ or of the form $|x-a| > k$ so that the inequality has the given solution set.

511) $(-5, 5)$

A) $|x+5| > 0$ B) $|x-5| > 0$ C) $|x| < 5$ D) $|x| > 5$

Answer: C

512) $[-10, 10]$

A) $|x| \leq 10$ B) $|x| \geq 10$ C) $|x+10| \geq 0$ D) $|x-10| \geq 0$

Answer: A

513) $(-\infty, -6) \cup (6, \infty)$

A) $|x+6| > 0$ B) $|x-6| > 0$ C) $|x| < 6$ D) $|x| > 6$

Answer: D

514) $(-\infty, -5] \cup [5, \infty)$

A) $|x| \geq 5$ B) $|x - 5| \geq 0$ C) $|x| \leq 5$ D) $|x + 5| \geq 0$

Answer: A

515) $(-\infty, -16) \cup (-2, \infty)$

A) $|x| > -2$ B) $|x| > -16$ C) $|x + 9| > 7$ D) $|x + 9| < 7$

Answer: C

516) $(-\infty, -13] \cup [-3, \infty)$

A) $|x + 8| \geq 5$ B) $|x| \geq -13$ C) $|x + 8| \leq 5$ D) $|x| \geq -3$

Answer: A

517) $(-4, 6)$

A) $|x| < 6$ B) $|x - 1| > 5$ C) $|x - 1| < 5$ D) $|x| < -4$

Answer: C

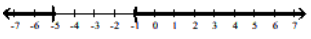
518) $[-12, 2]$

A) $|x| \leq -12$ B) $|x| \leq 2$ C) $|x + 5| \leq 7$ D) $|x + 5| \geq 7$

Answer: C

Write an absolute value inequality that has the given solution set.

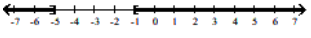
519)



A) $|x - 6| < 2$ B) $|x + 3| > 2$ C) $|x| > -6$ D) $|x - 3| > 2$

Answer: B

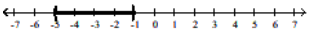
520)



A) $|x| \geq -6$ B) $|x - 3| \geq 2$ C) $|x - 6| \leq 2$ D) $|x + 3| \geq 2$

Answer: D

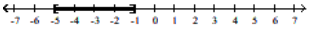
521)



A) $|x + 3| < 2$ B) $|x| < -6$ C) $|x - 6| < 2$ D) $|x - 3| > 2$

Answer: A

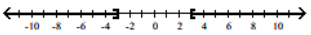
522)



A) $|x| \leq -6$ B) $|x - 6| \leq 2$ C) $|x + 3| \leq 2$ D) $|x - 3| \geq 2$

Answer: C

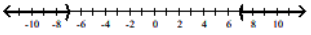
523)



A) $|x - 3| \geq 0$ B) $|x| \geq 3$ C) $|x - 3| \leq 0$ D) $|x| \leq 3$

Answer: B

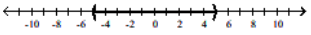
524)



A) $|x - 7| > 0$ B) $|x| > 7$ C) $|x - 7| < 0$ D) $|x| < 7$

Answer: B

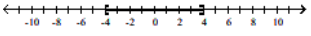
525)



A) $|x - 5| < 0$ B) $|x - 5| > 0$ C) $|x| > 5$ D) $|x| < 5$

Answer: D

526)



A) $|x - 4| \leq 0$ B) $|x| \leq 4$ C) $|x - 4| \geq 0$ D) $|x| \geq 4$

Answer: B

Find the values of x for which the expression is a real number.

527) $\sqrt{8x - 6}$

A) $\left[\frac{16}{9}, \infty\right)$ B) $\left[\frac{4}{3}, \infty\right)$ C) $\left(-\infty, \frac{4}{3}\right]$ D) $\left[\frac{3}{4}, \infty\right)$

Answer: D

528) $\sqrt{2|x| - 4}$

A) $\left(-\infty, -\frac{1}{2}\right] \cup (2, \infty)$ B) $\left(-\frac{1}{2}, 2\right)$ C) $(-\infty, -2] \cup [2, \infty)$ D) $[-2, 2]$

Answer: C

529) $\sqrt{x - 14}$

A) $[14, \infty)$ B) $(-\infty, 14]$ C) $(14, \infty)$ D) $(-\infty, 14)$

Answer: A

530) $\frac{1}{\sqrt{10 - x}}$

A) $(-\infty, 10]$ B) $(10, \infty)$ C) $(-\infty, 10)$ D) $[10, \infty)$

Answer: C

Solve the problem.

531) An omelette costs $1.25 more than Mario's order of pancakes. After treating his family to breakfast, Mario is sure that 4 omelettes and 3 orders of pancakes cost more than $25 but not more than $40, including tax of 7% and a tip of $3.50. In what price range is an order of pancakes?

A) ($2.16, $4.16] B) ($2.12, $4.13] C) ($2.16, $4.16) D) [$2.12, $4.13]

Answer: A

532) Max scored 69 and 67 on his first two tests in Biology 101. What must he score on the third test to get an average for the three tests above 77?

A) (92, ∞) B) [96, ∞) C) [95, ∞) D) (95, ∞)

Answer: D

533) There is less than $1100 difference between the tuition at State University and Highbrow College. The tuition at Highbrow is $4500. Express this as an absolute value inequality. Use "x" for the tuition of State University.

A) $x > 4500 - |1100|$ B) $|x - 1100| < 4500$ C) $x < |3400|$ D) $|x - 4500| < 1100$

Answer: D

534) A salesperson has two job offers. Company A offers a weekly salary of $640 plus commission of 16% of sales. Company B offers a weekly salary of $1280 plus commission of 8% of sales. What is the amount of sales above which Company A's offer is the better of the two?

A) $4000 B) $16,000 C) $8100 D) $8000

Answer: D

535) Company A rents copiers for a monthly charge of $160 plus 8 cents per copy. Company B rents copiers for a monthly charge of $320 plus 4 cents per copy. What is the number of copies above which Company A's charges are the higher of the two?

A) 8000 copies B) 2000 copies C) 4000 copies D) 4100 copies

Answer: C

536) A car rental company has two rental rates. Rate 1 is $81 per day plus $.18 per mile. Rate 2 is $162 per day plus $.09 per mile. If you plan to rent for one day, how many miles would you need to drive to pay less by taking Rate 2?

A) more than 900 miles B) more than 450 miles
C) more than 1000 miles D) more than 1800 miles

Answer: A

537) A bag of marbles has twice as many blue marbles as green marbles, and the bag has at least 51 marbles in it. At least how many green marbles does it have?

A) At least 18 green marbles B) At least 17 green marbles
C) At least 34 green marbles D) At least 26 green marbles

Answer: B

538) Jon has 1152 points in his math class. He must have 90% of the 1400 points possible by the end of the term to receive credit for the class. What is the minimum number of additional points he must earn by the end of the term to receive credit for the class?

A) 248 points B) 1037 points C) 1260 points D) 108 points

Answer: D

539) The inequality $|T - 54| \leq 16$ describes the range of monthly average temperatures T in degrees Fahrenheit at a City X. (i) Solve the inequality. (ii) If the high and low monthly average temperatures satisfy equality, interpret the inequality.

A) $38 \leq T \leq 70$; The monthly averages are always within 16° of 54°F.
B) $T \leq 70$; The monthly averages are always less than or equal to 70°F.
C) $25 \leq T$; The monthly averages are always greater than or equal to 25°F.
D) $25 \leq T \leq 83$; The monthly averages are always within 29° of 54°F.

Answer: A

540) The inequality $|T - 37| \leq 7.2$ describes the range of monthly average temperatures T in degrees Fahrenheit at a City X. (i) Solve the inequality. (ii) If the high and low monthly average temperatures satisfy equality, interpret the inequality.

A) $33.3 \leq T \leq 40.7$; The monthly averages are always within 3.7° of 37°F.
B) $29.8 \leq T \leq 44.2$; The monthly averages are always within 7.2° of 37°F.
C) $-44.2 \leq T \leq 51.4$; The monthly averages are always within 14.4° of 37°F.
D) $-40.7 \leq T \leq 44.4$; The monthly averages are always within 7.4° of 37°F.

Answer: B