Exam

Name_____

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

Decide whether the statement is true or false.

1) -6 is a solution of -7x = 42.   1) _____
    A) True   B) False

    Answer: A

2) 14 is a solution of -2x = -32.   2) _____
    A) True   B) False

    Answer: B

3) 1 is a solution of -7x - 6 = -13.   3) _____
    A) True   B) False

    Answer: A

4) -3 is a solution of 2x + 2 = -5.   4) _____
    A) True   B) False

    Answer: B

5) -8 is a solution of 8x + 5x = -104.   5) _____
    A) True   B) False

    Answer: A

6) -7 is a solution of -7x - 7x = -5.   6) _____
    A) True   B) False

    Answer: B

7) 3 is a solution of -5x + 4x = -2x.   7) _____
    A) True   B) False

    Answer: B

Decide whether or not the equations are equivalent.

8) $z^2 = 4$ 8) _____
   $z = 2$
    A) Equivalent   B) Not equivalent

    Answer: B

9) $x = -8$ 9) _____
   $x^2 = 64$
    A) Not equivalent   B) Equivalent

    Answer: A

10) $x = 2 - 4x$ 10) _____
    $3x = 2$
    A) Not equivalent   B) Equivalent

    Answer: A

11) $\dfrac{x + 1}{5} = \dfrac{4}{5}$

    x + 2 = 5

      A) Equivalent   B) Not equivalent

    Answer: A

12) 3x – 1 = 7

    -3x + 7 = -1

      A) Not equivalent   B) Equivalent

    Answer: B

13) 2x – 3 = 7

    -2x – 3 = 7

      A) Equivalent   B) Not equivalent

    Answer: B

Determine whether or not the equation is linear.

14) $2x + 5(x - 2) = 16x$

      A) Linear   B) Not linear

    Answer: A

15) $6x + 7x(x - 9) = 16x$

      A) Linear   B) Not linear

    Answer: B

16) $6x^2 - 5x + 9 = 0$

      A) Not linear   B) Linear

    Answer: A

17) $0.06x - 0.05x = 0.90$

      A) Linear   B) Not linear

    Answer: A

18) $0.04x^2 + 0.07x = 0.20$

      A) Linear   B) Not linear

    Answer: B

19) 3x = 5x + 8x

      A) Not linear   B) Linear

    Answer: B

20) 7x + 3x = 0

      A) Not linear   B) Linear

    Answer: B

21) 6x – 5 = 0

      A) Linear   B) Not linear

    Answer: A

Solve the equation.

22) $-7x + 1 = x - 6$

    A) $\left\{\dfrac{5}{8}\right\}$ B) $\left\{\dfrac{7}{8}\right\}$ C) $\left\{\dfrac{5}{7}\right\}$ D) $\{1\}$

    Answer: B

22) _____

23) $2x + 1 - 5(x + 1) = -7x - 1$

    A) $\left\{\dfrac{3}{2}\right\}$ B) $\left\{\dfrac{5}{2}\right\}$ C) $\left\{\dfrac{5}{4}\right\}$ D) $\left\{\dfrac{3}{4}\right\}$

    Answer: D

23) _____

24) $-7[-2x + 4 - 3(x + 1)] = -3x - 4$

    A) $\left\{-\dfrac{3}{2}\right\}$ B) $\left\{-\dfrac{53}{38}\right\}$ C) $\left\{\dfrac{53}{2}\right\}$ D) $\left\{\dfrac{3}{38}\right\}$

    Answer: D

24) _____

25) $\dfrac{x - 8}{2} = \dfrac{x + 8}{7}$

    A) $\left\{\dfrac{24}{5}\right\}$ B) $\left\{\dfrac{72}{5}\right\}$ C) $\{8\}$ D) $\{-8\}$

    Answer: B

25) _____

26) $1 - \dfrac{6}{8x} = \dfrac{2}{5}$

    A) $\left\{-\dfrac{5}{4}\right\}$ B) $\{-10\}$ C) $\{-30\}$ D) $\left\{\dfrac{5}{4}\right\}$

    Answer: D

26) _____

27) $-6x - 2 - 2(x + 1) = -(-7x + 7)$

    A) $\left\{\dfrac{1}{2}\right\}$ B) $\left\{-\dfrac{11}{6}\right\}$ C) $\left\{\dfrac{1}{5}\right\}$ D) $\left\{-\dfrac{11}{15}\right\}$

    Answer: C

27) _____

28) $-6[-5x + 3 - 6(x + 1)] = 2x - 5$

    A) $\left\{\dfrac{59}{5}\right\}$ B) $\left\{-\dfrac{59}{64}\right\}$ C) $\left\{\dfrac{23}{5}\right\}$ D) $\left\{-\dfrac{23}{64}\right\}$

    Answer: D

28) _____

29) $\dfrac{7x}{9} - 8 = x$

    A) $\{144\}$ B) $\{36\}$ C) $\{-36\}$ D) $\{72\}$

    Answer: C

29) _____

30) $\dfrac{x - 6}{5} = \dfrac{x + 3}{7}$

    A) $\left\{\dfrac{19}{4}\right\}$ B) $\left\{-\dfrac{27}{2}\right\}$ C) $\left\{\dfrac{21}{2}\right\}$ D) $\left\{\dfrac{57}{2}\right\}$

    Answer: D

30) _____

31) -3.6x + 1.0 = -16 - 1.9x   31) _____
    A) {4.7}   B) {10}   C) {-19}   D) {5.3}

    Answer: B

Decide whether the equation is an identity, a conditional equation, or a contradiction. Give the solution set.

32) 24x + 15 = 3(3x - 35)   32) _____
    A) Identity; {all real numbers}   B) Conditional; {-8}
    C) Contradiction; ∅   D) Conditional; {6}

    Answer: B

33) 3(12x + 8) = 6(4x + 22)   33) _____
    A) Contradiction; ∅   B) Identity; {all real numbers}
    C) Conditional; {9}   D) Conditional; {-13}

    Answer: C

34) 5(2x - 31) = 10x - 155   34) _____
    A) Identity; {all real numbers}   B) Conditional; {0}
    C) Contradiction; ∅   D) Identity; ∅

    Answer: A

35) 8(x - 7) + (-16x) = -8(x + 4) + 16   35) _____
    A) Contradiction; ∅   B) Conditional; {1}
    C) Identity; {all real numbers}   D) Conditional; {0}

    Answer: A

36) 24(x - 3) = 2(12x - 5) - 62   36) _____
    A) Identity; {all real numbers}   B) Conditional; {0}
    C) Contradiction; ∅   D) Conditional; {-72}

    Answer: A

37) 2(5x - 14) - 10x + 28 = 0   37) _____
    A) Conditional; {0}   B) Identity; {all real numbers}
    C) Contradiction; ∅   D) Conditional; {5}

    Answer: B

38) 10x + 91 = 2(5x + 41)   38) _____
    A) Conditional; {5}   B) Identity; {all real numbers}
    C) Contradiction; ∅   D) Conditional; {-5}

    Answer: C

39) -9x + 47 + 3(3x - 14) = 0   39) _____
    A) Identity; {all real numbers}   B) Conditional; {3}
    C) Conditional; {1}   D) Contradiction; ∅

    Answer: D

40) 2x + 6(x + 1) + 2 = 8 - 2x   40) _____
    A) Identity; {all real numbers}   B) Conditional; {0}
    C) Contradiction; ∅   D) Conditional; {1}

    Answer: B

41) $2[3 - (6 - 5x)] - x = -12 + 3(2 + 3x)$　　　　　　　　　　　　41) _____
    A) Identity; {all real numbers}　　　　　　　B) Conditional; {-6}
    C) Conditional; {12}　　　　　　　　　　　　D) Contradiction; ∅

   Answer: A

42) $-0.8(x + 3) + 0.1(x + 3) = -0.7x - 2.1$　　　　　　　　　　　42) _____
    A) Conditional; {-0.7}　　　　　　　　　　B) Identity; {all real numbers}
    C) Contradiction; ∅　　　　　　　　　　　D) Conditional; {-3}

   Answer: B

43) $0.5(x - 3) - 0.2(x - 3) = 0.3x - 0.9$　　　　　　　　　　　43) _____
    A) Contradiction; ∅　　　　　　　　　　　B) Conditional; {0.7}
    C) Identity; {all real numbers}　　　　　　D) Conditional; {-3}

   Answer: C

Solve the formula for the indicated variable.

44) $A = bh$, for h　　　　　　　　　　　　　　　　　　　　　　44) _____

    A) $h = A - b$　　　　B) $h = \dfrac{A}{b}$　　　　C) $h = Ab$　　　　D) $h = \dfrac{b}{A}$

   Answer: B

45) $I = Prt$, for P　　　　　　　　　　　　　　　　　　　　　　45) _____

    A) $P = \dfrac{I}{rt}$　　　　B) $P = r - It$　　　　C) $P = \dfrac{r - I}{1 + t}$　　　　D) $P = \dfrac{r - 1}{It}$

   Answer: A

46) $S = 2\pi rh + 2\pi r^2$, for h　　　　　　　　　　　　　　　　46) _____

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

   Answer: B

47) $V = \dfrac{1}{3}Bh$, for B　　　　　　　　　　　　　　　　　　47) _____

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

   Answer: C

48) $P = s_1 + s_2 + s_3$, for s_2　　　　　　　　　　　　　　　48) _____
    A) $s_2 = P - s_1 - s_3$　　　B) $s_2 = s_1 + P - s_3$　　　C) $s_2 = P + s_1 + s_3$　　　D) $s_2 = s_1 + s_3 - P$

   Answer: A

49) $F = \dfrac{9}{5}C + 32$, for C　　　　　　　　　　　　　　　49) _____

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

   Answer: C

50) $P = 2I + 2w$, for I

    A) $I = P - 2w - 2$ B) $I = \dfrac{P}{2} - 2w$ C) $I = \dfrac{P}{2w + 2}$ D) $I = \dfrac{P - 2w}{2}$

    Answer: D

50) _____

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

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

    Answer: C

51) _____

52) $A = P(1 + nr)$, for r

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

    Answer: A

52) _____

53) $I = \dfrac{nE}{nr + R}$, for n

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

    Answer: C

53) _____

Solve for y.

54) $9x + 2y = 5$

    A) $y = \dfrac{7}{9x}$ B) $y = 9 + 9x$ C) $y = 7 - 9x$ D) $y = \dfrac{5 - 9x}{2}$

    Answer: D

54) _____

55) $7x - 5y = 2$

    A) $y = \dfrac{7x + 2}{5}$ B) $y = 7x - 7$ C) $y = 7x + 7$ D) $y = \dfrac{7x - 2}{5}$

    Answer: D

55) _____

56) $9x = 10y - 7$

    A) $y = 17 + 9x$ B) $y = 17 - 9x$ C) $y = \dfrac{9x - 7}{10}$ D) $y = \dfrac{9x + 7}{10}$

    Answer: D

56) _____

57) $3 = 4x - 9y$

    A) $y = \dfrac{4x + 3}{9}$ B) $y = \dfrac{4x - 3}{9}$ C) $y = 12 + 4x$ D) $y = 12 - 4x$

    Answer: B

57) _____

58) $y - 4(x + 10) = 2 + 2y$

    A) $y = 4x + 42$ B) $y = 4x + 38$ C) $y = -4x - 42$ D) $y = -4x + 42$

    Answer: C

58) _____

59) $7x - 6(x + y) = y - x$ 59) _____

    A) $y = 2x$ B) $y = 2x - 7$ C) $y = \frac{2}{7}x$ D) $y = 2x + 7$

    Answer: C

60) $8y + x^2 = x + 10$ 60) _____

    A) $y = x + 10 - x^2$ B) $y = \dfrac{x + 10 - x^2}{8}$ C) $y = \dfrac{x^2 - x - 10}{8}$ D) $y = x^2 - x - 10$

    Answer: B

61) $4x^2 - y + 6x = 0$ 61) _____

    A) $y = 4x^2 - 6x$ B) $y = 4x^2 + 6x$ C) $y = -4x^2 + 6x$ D) $y = -4x^2 - 6x$

    Answer: B

62) $5x + 8 = 6y - 9$ 62) _____

    A) $y = \dfrac{5x - 17}{6}$ B) $y = \dfrac{5x + 17}{6}$ C) $y = 5x + 17$ D) $y = 5x - 17$

    Answer: B

Solve the problem.

63) Levi borrowed $5007 at 6% simple interest for 5 months. How much will the interest amount to?   63) _____
What is the total amount that Levi will have to pay back at the end of 5 months? Round answers to
the nearest cent if necessary.
    A) $126.23; $5133.23   B) $125.18; $5132.18
    C) $150.21; $5157.21   D) $100.14; $5107.14

    Answer: B

64) Sophia borrowed $11,790 at 6% simple interest for 4 months. How much will the interest amount   64) _____
to? What is the total amount that she will have to pay back at the end of 4 months? Round answers
to the nearest cent if necessary.
    A) $294.75; $12,084.75   B) $176.85; $11,966.85
    C) $237.78; $12,027.78   D) $235.80; $12,025.80

    Answer: D

65) Hannah borrowed $52,084 at 5% simple interest for 18 months. How much will the interest amount   65) _____
to? What is the total amount that she will have to pay back at the end of 18 months? Round answers
to the nearest cent if necessary.
    A) $3939.13; $56,023.13   B) $3906.30; $55,990.30
    C) $3689.28; $55,773.28   D) $4123.32; $56,207.32

    Answer: B

Use these equations to convert between the two systems.

$$C = \frac{5}{9}(F - 32) \qquad F = \frac{9}{5}C + 32$$

Round answer to the nearest tenth of a degree if necessary.

66) $F = 350°$ 66) _____
    A) $C = 190.9°$ B) $C = 572.4°$ C) $C = 176.7°$ D) $C = 662°$

    Answer: C

67) C = 87°

    A) F = 30.6°   B) F = 188.6°   C) F = 214.2°   D) F = 66.1°

Answer: B

68) F = 5°

    A) C = -15°   B) C = -0.8°   C) C = 20.6°   D) C = -48.6°

Answer: A

69) C = 1°

    A) F = 59.4°   B) F = 18.3°   C) F = -17.2°   D) F = 33.8°

Answer: D

Solve the problem.

70) Find the corresponding Celsius temperature for a temperature of 290°F. Round to the nearest tenth, if necessary.

    A) 157.6°C   B) 464.4°C   C) 143.3°C   D) 554°C

Answer: C

71) Find the corresponding Fahrenheit temperature for a temperature of 90°C. Round to the nearest tenth, if necessary.

    A) 219.6°F   B) 194°F   C) 67.8°F   D) 32.2°F

Answer: B

72) Find the length of a rectangular lot with a perimeter of 148 m if the length is 6 m more than the width.

    A) 40 m   B) 74 m   C) 80 m   D) 34 m

Answer: A

73) A square plywood platform has a perimeter which is 9 times the length of a side, decreased by 30. Find the length of a side.

    A) 6   B) 11   C) 1   D) 5

Answer: A

74) A rectangular Persian carpet has a perimeter of 208 inches. The length of the carpet is 18 in. more than the width. What are the dimensions of the carpet?

    A) Width: 61 in.; length: 79 in.   B) Width: 43 in.; length: 61 in.
    C) Width: 95 in.; length: 113 in.   D) Width: 86 in.; length: 104 in.

Answer: B

75) A triangular shaped lake-front lot has a perimeter of 1200 ft. One side is 100 ft longer than the shortest side, while the third side is 200 ft longer than the shortest side. Find the lengths of all three sides.

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

Answer: A

76) In triangle *ABC*, the angle *C* is six times as large as angle *A*. The measure of angle *B* is 28° greater than that of angle *A*. Find the measure of the angles.

    A) 19° , 66° and 95°   B) 19° , 47° and 133°

    C) 19° , 66° and 114°   D) 19° , 47° and 114°

76) _____

Answer: D

77) In triangle *ABC*, angle *A* is three times as large as angle *C*. The measure of angle *B* is 25° less than that of angle *C*. Find the measure of the angles.

    A) 82° , 16° and 82°   B) 123° , 16° and 82°

    C) 123° , 16° and 41°   D) 82° , 16° and 41°

77) _____

Answer: C

78) A cylindrical container has a volume of 1088π m^3 and a radius of 8 m. Find the height of the container.

    A) 17 m   B) 4 m   C) 8 m   D) 22 m

78) _____

Answer: A

79) A circular hole is filled with concrete to make a footing for a load-bearing pier. The hole measures 18 inches across and requires 2.1 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) 19 in.   B) 21 in.   C) 15 in.   D) 12 in.

79) _____

Answer: C

80) A bookcase is to be constructed as shown in the figure below. The height of the bookcase is 2 feet longer than the length of a shelf. If 22 feet of lumber is available for the entire unit (including the shelves, but NOT the back of the bookcase), find the length and height of the unit.

80) _____
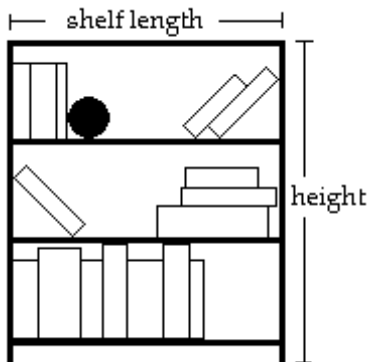
    A) length = 4.5 ft; height = 6.5 ft   B) length = 3 ft; height = 6 ft

    C) length = 10.0 ft; height = 13.5 ft   D) length = 3 ft; height = 5 ft

Answer: D

81) Find the height of a moving box if its length is 31 in., its width is 29 in., and its surface area is 3358 in^2. Assume that the surface area includes the top of the moving box.

    A) 13 in.   B) 29 in.   C) 11,687 in.   D) 31 in.

81) _____

Answer: A

82) Chuck and Dana agree to meet in Chicago for the weekend. Chuck travels 252 miles in the same time that Dana travels 236 miles. If Chuck's rate of travel is 4 mph more than Dana's, and they travel the same length of time, at what speed does Chuck travel?

    A) 59 mph   B) 58 mph   C) 68 mph   D) 63 mph

82) _____

Answer: D

83) In the morning, May drove to an appointment at 50 mph. Her average speed on the return trip in the afternoon was 40 mph. The return trip took $\frac{1}{2}$ hour longer. How far did she travel to the appointment?

    A) 100 mi   B) 80 mi   C) 30 mi   D) 2 mi

83) _____

Answer: A

84) Noah and Ben are running in the Walker Street Fun Run. Noah runs at 7 mph, Ben at 5 mph. If they start at the same time, how long (in minutes) will it be before they are $\frac{1}{3}$ mile apart?

    A) 90 min   B) 6 min   C) 40 min   D) 10 min

84) _____

Answer: D

85) Jill is 18 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 4 hours. How fast is Joe walking?

    A) 5 km/hr   B) 3 km/hr   C) 4 km/hr   D) 1.5 km/hr

85) _____

Answer: B

86) Candy and Delvis are riding bicycles in the same direction. Candy is traveling at a speed of 6 miles per hour, and Delvis is traveling at a speed of 8 miles per hour. In 5 hours what is the distance between them (assuming that they began at the same point and time)?

    A) 11 mi   B) 19 mi   C) 7 mi   D) 10 mi

86) _____

Answer: D

87) From a point on a river, two boats are driven in opposite directions, one at 5 miles per hour and the other at 8 miles per hour. In how many hours will they be 26 miles apart?

    A) 3 hr   B) 4 hr   C) 2 hr   D) 1 hr

87) _____

Answer: C

88) Tom Quig traveled 240 miles east of St. Louis. For most of the trip he averaged 70 mph, but for one period of time he was slowed to 20 mph due to a major accident. If the total time of travel was 7 hours, how many miles did he drive at the reduced speed?

    A) 110 mi   B) 95 mi   C) 120 mi   D) 100 mi

88) _____

Answer: D

89) On a recent trip, Sarah's car traveled 20 mph faster on the first 160 miles than it did on the remaining 80 miles. The total time for the trip was 4 hr. Find the speed of Sarah's car on the first part of the trip.

    A) 52 mph   B) 12 mph   C) 68 mph   D) 48 mph

89) _____

Answer: C

90) An airplane leaves Los Angeles for Denver at a speed of 420 mph. Thirty minutes later, a plane going from Denver to Los Angeles leaves Denver, which is 850 miles from Los Angeles, at a speed of 520 mph. When they meet, how far are they from Denver?

    A) 61 mi   B) 354 mi   C) 123 mi   D) 307 mi

90) _____

Answer: B

91) An airplane flies from Metro City to Gotham with a tailwind that increases its normal speed by 70 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 2.70 hours and the return trip takes 4.35 hours. How far is it from Metro City to Gotham?

    A) 1120 mi   B) 1200 mi   C) 1300 mi   D) 1000 mi

91) _____

Answer: D

92) How many liters of a 30% alcohol solution must be mixed with 90 liters of a 50% solution to get a 40% solution?

    A) 180 L   B) 18 L   C) 90 L   D) 9 L

92) _____

Answer: C

93) In a chemistry class, 9 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) 9 L   B) 5.5 L   C) 4.5 L   D) 3.5 L

93) _____

Answer: C

94) It is necessary to have a 40% antifreeze solution in the radiator of a certain car. The radiator now has 50 liters of 20% solution. How many liters of this should be drained and replaced with 100% antifreeze to get the desired strength?

    A) 12.5 L   B) 25 L   C) 16.7 L   D) 20 L

94) _____

Answer: A

95) How much pure acid should be mixed with 8 gallons of a 50% acid solution in order to get an 80% acid solution?

    A) 32 gal   B) 20 gal   C) 12 gal   D) 4 gal

95) _____

Answer: C

96) A chemist needs 120 milliliters of a 69% solution but has only 61% and 73% solutions available. Find how many milliliters of each that should be mixed to get the desired solution.

    A) 70 mL of 61%; 50 mL of 73%   B) 50 mL of 61%; 70 mL of 73%
    C) 40 mL of 61%; 80 mL of 73%   D) 80 mL of 61%; 40 mL of 73%

96) _____

Answer: C

97) Mardi received an inheritance of $40,000. She invested part at 1.5% and deposited the remainder in tax-free bonds at 2%. Her total annual income from the investments was $650. Find the amount invested at 1.5%.

    A) $39,350   B) $15,000   C) $29,000   D) $30,000

97) _____

Answer: D

98) Walt made an extra $7000 last year from a part-time job. He invested part of the money at 2% and the rest at 3.75%. He made a total of $192.50 in interest. How much was invested at 3.75%?

    A) $4000   B) $3500   C) $5000   D) $3000

98) _____

Answer: D

99) Roberto invested some money at 2.5%, and then invested $4000 more than twice this amount at 3%. His total annual income from the two investments was $970.00. How much was invested at 3%?

    A) $12,000   B) $24,000   C) $2400   D) $20,000

99) _____

Answer: B

100) Helen Weller invested $13,000 in an account that pays 1.25% simple interest. How much additional money must be invested in an account that pays 3.5% simple interest so that the average return on the two investments amounts to 2%?

    A) $9000   B) $6500   C) $13,000   D) $10,000

100) _____

Answer: B

101) Don James wants to invest $63,000 to earn $1288 per year. He can invest in B-rated bonds paying 2.6% per year or in a Certificate of Deposit (CD) paying 1.6% per year. How much money should be invested in each to realize exactly $1288 in interest per year?

    A) $28,000 in B-rated bonds and $35,000 in a CD
    B) $35,000 in B-rated bonds and $28,000 in a CD
    C) $34,000 in B-rated bonds and $29,000 in a CD
    D) $29,000 in B-rated bonds and $34,000 in a CD

101) _____

Answer: A

102) A bank loaned out $69,000, part of it at the rate of 2.25% per year and the rest at a rate of 3.5% per year. If the interest received was $2065.00, how much was loaned at 2.25%?

    A) $41,000   B) $28,000   C) $29,000   D) $40,000

102) _____

Answer: B

103) Kevin invested part of his $5000 bonus in a certificate of deposit that paid 2% annual simple interest, and the remainder in a mutual fund that paid 4% annual simple interest. If his total interest for that year was $140, how much did Kevin invest in the mutual fund?

    A) $4986.00   B) $4846.00   C) $2000.00   D) $2140.00

103) _____

Answer: C

104) A person's emotional quotient (EQ) is found by multiplying emotional age by 100 and dividing by chronological age. Using this information, if a 13 yr old person has an EQ of 97 what is that person's emotional age?

    A) 13 years old   B) 12.61 years old   C) 22 years old   D) 13.4 years old

104) _____

Answer: B

105) A toy company uses the linear model $y = -5x + 560$ to predict the decline in sales of a toy after it has been on the market more than one year. If x is the number of months after the first year and y is the number of toys sold in hundreds during that month, how many toys will be sold 7 months after the first year?

    A) -279,300 toys   B) -11,060 toys   C) 59,500 toys   D) 52,500 toys

105) _____

Answer: D

106) A computer company uses the linear model $y = -45x + 34{,}030$ to predict the decline in sales of a computer after it has been on the market more than one year. If x is the number of months after the first year and y is the number of computers sold during that month, how many computers will be sold 2 months after the first year?

    A) 33,940 computers   B) 33,400 computers
    C) 756 computers   D) 34,120 computers

106) _____

Answer: A

107) Your home state uses a linear model $y = 34(x - 70) + 4182$ to predict the number of vacationers (y) as   107) _____
compared to the average temperature for that week (x). Find the number of vacationers predicted
for a week with an average temperature of 72 degrees.
    A) 142,256 vacationers   B) 9010 vacationers
    C) 4250 vacationers   D) 6560 vacationers

Answer: C

Indicate whether the statement is true always, sometimes, or never.
108) A real number is a complex number.   108) _____
    A) Sometimes   B) Always   C) Never

Answer: B

109) A complex number is an imaginary number.   109) _____
    A) Never   B) Always   C) Sometimes

Answer: C

110) The sum of two imaginary numbers is an imaginary number.   110) _____
    A) Never   B) Always   C) Sometimes

Answer: C

111) The difference between two real numbers is a real number.   111) _____
    A) Never   B) Sometimes   C) Always

Answer: C

112) The product of two imaginary numbers is a real number.   112) _____
    A) Sometimes   B) Never   C) Always

Answer: A

113) The product of a pair of complex conjugates is a real number.   113) _____
    A) Sometimes   B) Never   C) Always

Answer: C

114) The product of a pair of complex conjugates (with $b \neq 0$) is the difference of the squares of the real   114) _____
and imaginary parts.
    A) Always   B) Never   C) Sometimes

Answer: B

115) To find the quotient $\dfrac{10 + 3i}{10 - 3i}$, multiply numerator and denominator by 10 + 3i.   115) _____

    A) Never   B) Sometimes   C) Always

Answer: C

116) When i is raised to an even power, the result is -1.   116) _____
    A) Never   B) Always   C) Sometimes

Answer: C

117) When i is raised to an odd power, the result is -1.   117) _____
    A) Never   B) Sometimes   C) Always

Answer: A

Identify the number as real, complex, pure imaginary, or nonreal complex. More than one of these descriptions may apply.

118) -14 + i   118) _____
    A) Real, complex
    B) Complex, pure imaginary, nonreal complex
    C) Nonreal complex
    D) Complex

    Answer: C

119) 3 - 9i   119) _____
    A) Complex, pure imaginary, nonreal complex
    B) Complex
    C) Nonreal complex
    D) Real, complex

    Answer: C

120) 12   120) _____
    A) Nonreal complex
    B) Complex, pure imaginary, nonreal complex
    C) Complex
    D) Real, complex

    Answer: D

121) -1   121) _____
    A) Complex
    B) Nonreal complex
    C) Complex, pure imaginary, nonreal complex
    D) Real, complex

    Answer: D

122) 0   122) _____
    A) Complex, pure imaginary, nonreal complex
    B) Nonreal complex
    C) Complex
    D) Real, complex

    Answer: D

123) π 123) _____
    A) Nonreal complex
    B) Complex, pure imaginary, nonreal complex
    C) Complex
    D) Real, complex

    Answer: D

124) $\sqrt{10}$ 124) _____
    A) Real, complex
    B) Nonreal complex
    C) Complex
    D) Complex, pure imaginary, nonreal complex

    Answer: A

125) $\sqrt{-13}$ 125) _____

    A) Complex, pure imaginary, nonreal complex
    B) Real, complex
    C) Nonreal complex
    D) Complex

Answer: A

Write the number as the product of a real number and i.

126) $\sqrt{-121}$ 126) _____

    A) $11\sqrt{i}$ B) $-11i$ C) $11i$ D) $-i\sqrt{121}$

Answer: C

127) $-\sqrt{-25}$ 127) _____

    A) $i\sqrt{25}$ B) $-5i$ C) 5 D) $5i$

Answer: B

128) $\sqrt{-13}$ 128) _____

    A) $i\sqrt{13}$ B) $i\sqrt{-13}$ C) $\sqrt{13}i$ D) $-i\sqrt{13}$

Answer: A

129) $\sqrt{-76}$ 129) _____

    A) $-2\sqrt{19}i$ B) $2\sqrt{19}i$ C) $-2i\sqrt{19}$ D) $2i\sqrt{19}$

Answer: D

Multiply or divide, as indicated. Simplify the answer.

130) $\sqrt{-13} \cdot \sqrt{-13}$ 130) _____

    A) 13 B) -13 C) $-13i$ D) $13i$

Answer: B

131) $\dfrac{\sqrt{-150}}{\sqrt{-6}}$ 131) _____

    A) 5 B) $-5i$ C) -5 D) $5i$

Answer: A

132) $\dfrac{\sqrt{-24}}{\sqrt{6}}$ 132) _____

    A) 2 B) $2i$ C) $-2i$ D) -2

Answer: B

133) $\dfrac{\sqrt{-10}}{\sqrt{-250}}$ 133) _____

    A) $\dfrac{1}{5i}$ B) $\dfrac{1}{5}$ C) $-\dfrac{1}{5}i$ D) $-\dfrac{1}{5}$

Answer: B

134) $\dfrac{\sqrt{-7}}{\sqrt{63}}$

134) _____

    A) $\dfrac{1}{3}i$ B) $-\dfrac{1}{3}$ C) $\dfrac{1}{3}$ D) $-\dfrac{1}{3}i$

    Answer: A

135) $\dfrac{\sqrt{-12}\cdot\sqrt{-4}}{\sqrt{3}}$

135) _____

    A) 4   B) -4   C) -4i   D) 4i

    Answer: B

Write the number in standard form a + bi.

136) $\dfrac{6-\sqrt{-28}}{2}$

136) _____

    A) $3 - i\sqrt{7}$ B) $3 + i\sqrt{14}$ C) $3 - 2i\sqrt{7}$ D) $3 - i\sqrt{14}$

    Answer: A

137) $\dfrac{-4-\sqrt{-108}}{2}$

137) _____

    A) $-2 + 6i\sqrt{6}$ B) $-2 + 6i\sqrt{3}$ C) $-2 - 3i\sqrt{3}$ D) $-2 - 3i\sqrt{6}$

    Answer: C

138) $\dfrac{-4+\sqrt{-80}}{32}$

138) _____

    A) $-\dfrac{1}{8}+\dfrac{5\sqrt{4}}{8}i$ B) $-\dfrac{1}{8}+\dfrac{\sqrt{5}}{8}i$ C) $-\dfrac{1}{8}+\dfrac{4\sqrt{5}}{8}i$ D) $-\dfrac{1}{8}+\dfrac{\sqrt{5}}{32}i$

    Answer: B

Find the sum or difference. Write the answer in standard form.

139) (6 - 9i) + (3 + 6i)

139) _____

    A) -9 + 3i   B) 3 + 15i   C) 9 - 3i   D) 9 + 3i

    Answer: C

140) 6i + (-5 - i)

140) _____

    A) -5 + 5i   B) 5 - 7i   C) 5 - 5i   D) -5 + 7i

    Answer: A

141) (4 + 9i) - (-8 + i)

141) _____

    A) 12 + 8i   B) -4 + 10i   C) -12 - 8i   D) 12 - 8i

    Answer: A

142) (-3 + 4i) - 4

142) _____

    A) 7 - 4i   B) -7 + 4i   C) 1 + 4i   D) 1 - 4i

    Answer: B

143) (-6 - 8i) + (7 + 3i) - 5i

    A) 1 + 10i   B) -13 - 5i   C) -4 - 10i   D) 1 - 10i

    Answer: D

143) _____

144) 7i + (-6 - i)

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

    Answer: D

144) _____

145) (2 + 5i) - (-4 - 7i) - (-1 - 3i)

    A) 7 + 15i   B) 7 - 5i   C) 5 + 9i   D) -3 - 5i

    Answer: A

145) _____

146) (7 - 7i) - (-9 - 7i) + (-7 - 8i)

    A) -9 - 22i   B) 9 - 8i   C) -9 + 8i   D) 9 - 22i

    Answer: B

146) _____

147) $i\sqrt{7} + 9 - (4 + 7i\sqrt{7}) - (9 - i\sqrt{7})$

    A) $-4 - 9i\sqrt{7}$ B) $4 - 9i\sqrt{7}$ C) $-4 + 5i\sqrt{7}$ D) $-4 - 5i\sqrt{7}$

    Answer: D

147) _____

148) $7\sqrt{5} - (5\sqrt{5} + i) + 3i - (-6\sqrt{5} + 3i)$

    A) $-8 - 5i\sqrt{5}$ B) $8\sqrt{5} - i$ C) $8 - 5i\sqrt{5}$ D) $8\sqrt{5} + i$

    Answer: B

148) _____

Find the product. Write the answer in standard form.

149) 6i(9 - 6i)

    A) 54i - 36   B) - 54i - 36i^2 C) 54i + 36i^2 D) 36 + 54i

    Answer: D

149) _____

150) (4 - 3i)(4 + 5i)

    A) -15i^2 + 8i - 16   B) 31 - 8i   C) 1 - 32i   D) 31 + 8i

    Answer: D

150) _____

151) (8 - 9i)(4 - 2i)

    A) 18i^2 - 52i + 32   B) 14 + 52i   C) 50 - 20i   D) 14 - 52i

    Answer: D

151) _____

152) (6 - 4i)^2

    A) 20 + 48i   B) 52 + 48i   C) 20 - 48i   D) 52 - 48i

    Answer: C

152) _____

153) i(9 - 3i)(5 - 3i)

    A) 9i^3 + 42i^2 + 45i   B) -42 - 36i   C) 54 + 12i   D) 42 + 36i

    Answer: D

153) _____

154) (-1 - 3i)(-1 + 3i)

    A) -8   B) 1 - 9i^2 C) 1 + 9i^2 D) 10

    Answer: D

154) _____

155) $(2 - 4i)^3$

    A) $i^3 + 96i^2 - 48i + a^3$ B) $-88 - 48i + i^3$

    C) $-88 + 16i$ D) $-88 - 145i$

    Answer: C

155) _____

156) $-4i(-8 - 6i)^2$

    A) $-112i$ B) $-112 - 384i$

    C) $384i - 384i^2 - 144i^3$ D) $384 - 112i$

    Answer: D

156) _____

157) $(\sqrt{2} + 8i)(\sqrt{2} - 8i)$

    A) $2 - 64i$ B) $2 + 64i$ C) -6 D) 66

    Answer: D

157) _____

158) $(5 + i)(5 - i)(4 + 6i)$

    A) $100 - 6i^3$ B) $96 + 144i$ C) $104 + 156i$ D) $104 + 6i$

    Answer: C

158) _____

Find the quotient. Write the answer in standard form.

159) $\dfrac{8 + 5i}{6 - 9i}$

    A) $\dfrac{1}{39} + \dfrac{34}{39}i$ B) $-\dfrac{31}{15} + \dfrac{34}{45}i$ C) $-\dfrac{1}{45} + \dfrac{34}{45}i$ D) $\dfrac{31}{13} + \dfrac{14}{13}i$

    Answer: A

159) _____

160) $\dfrac{2 + 3i}{5 + 2i}$

    A) $\dfrac{16}{29} + \dfrac{11}{29}i$ B) $\dfrac{16}{21} - \dfrac{11}{21}i$ C) $\dfrac{4}{21} - \dfrac{11}{21}i$ D) $\dfrac{4}{29} - \dfrac{19}{29}i$

    Answer: A

160) _____

161) $\dfrac{8 - 7i}{5 + 4i}$

    A) $\dfrac{4}{3} + \dfrac{67}{9}i$ B) $\dfrac{12}{41} - \dfrac{67}{41}i$ C) $\dfrac{68}{41} + \dfrac{3}{41}i$ D) $\dfrac{68}{9} + \dfrac{67}{9}i$

    Answer: B

161) _____

162) $\dfrac{3 - 8i}{5 - 6i}$

    A) $-\dfrac{33}{61} + \dfrac{58}{61}i$ B) $3 - 2i$ C) $-\dfrac{63}{11} - 2i$ D) $\dfrac{63}{61} - \dfrac{22}{61}i$

    Answer: D

162) _____

163) $\dfrac{7 + 3i}{4 - 6i}$

163) _____

    A) $-\dfrac{1}{4} + \dfrac{27}{20}i$ B) $\dfrac{5}{26} + \dfrac{27}{26}i$ C) $\dfrac{23}{13} + \dfrac{15}{13}i$ D) $-\dfrac{23}{10} + \dfrac{27}{20}i$

Answer: B

164) $\dfrac{9 + 2i}{4 + 9i}$

164) _____

    A) $\dfrac{18}{97} - \dfrac{89}{97}i$ B) $\dfrac{54}{97} - \dfrac{73}{97}i$ C) $-\dfrac{18}{65} - \dfrac{73}{65}i$ D) $-\dfrac{54}{65} - \dfrac{73}{65}i$

Answer: B

165) $\dfrac{2 - 6i}{8 + 2i}$

165) _____

    A) $\dfrac{7}{15} + \dfrac{13}{60}i$ B) $\dfrac{1}{17} - \dfrac{13}{17}i$ C) $\dfrac{1}{60} + \dfrac{13}{60}i$ D) $\dfrac{28}{17} + \dfrac{44}{17}i$

Answer: B

166) $\dfrac{-9}{-i}$

166) _____

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

Answer: C

167) $\dfrac{10}{-i}$

167) _____

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

Answer: B

168) $\dfrac{3}{5i}$

168) _____

    A) $\dfrac{3}{5}$ B) $-\dfrac{3}{5}$ C) $-\dfrac{3}{5}i$ D) $\dfrac{3}{5}i$

Answer: C

Simplify the power of i.

169) i^{56}

169) _____

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

Answer: A

170) i^{66}

170) _____

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

Answer: B

171) i^{69}

171) _____

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

Answer: B

172) i^{43}

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

Answer: B

173) $\dfrac{1}{i^{51}}$

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

Answer: D

174) $\dfrac{1}{i^{45}}$

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

Answer: C

175) i^{-26}

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

Answer: C

176) i^{-47}

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

Answer: D

177) $\dfrac{1}{i^{-20}}$

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

Answer: B

178) $\dfrac{1}{i^{-9}}$

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

Answer: A

Solve the problem.

179) Which one of the following equations is set up for direct use of the zero-factor property?

A) $(4x - 5)^2 = 6$ B) $x^2 - x = 6$

C) $(4x - 5)(x - 6) = 0$ D) $4x^2 - 5x - 6 = 0$

Answer: C

Solve the equation by the zero-factor property.

180) $x^2 + 8x - 20 = 0$

A) {2, 10}   B) {-10, -2}   C) {-2, 10}   D) {-10, 2}

Answer: D

181) $2x^2 = -27x - 81$

    A) $\{-9, -18\}$ B) $\left\{9, \dfrac{9}{2}\right\}$ C) $\left\{-\dfrac{9}{2}, -9\right\}$ D) $\left\{9, -\dfrac{9}{2}\right\}$

Answer: C

182) $x^2 + 4x - 45 = 0$

    A) $\{7, -7\}$ B) $\{-36, -9\}$ C) $\{-5, 9\}$ D) $\{5, -9\}$

Answer: D

183) $6x^2 + 23x + 21 = 0$

    A) $\left\{\dfrac{3}{2}, \dfrac{7}{3}\right\}$ B) $\left\{\dfrac{2}{3}, \dfrac{3}{7}\right\}$ C) $\left\{-\dfrac{2}{3}, -\dfrac{7}{3}\right\}$ D) $\left\{-\dfrac{3}{2}, -\dfrac{7}{3}\right\}$

Answer: D

184) $x^2 + 14x + 40 = 0$

    A) $\{-10, -4\}$ B) $\{4, 10\}$ C) $\{-20, -8\}$ D) $\{2\sqrt{10}, -2\sqrt{10}\}$

Answer: A

185) $4x^2 - 3x - 7 = 0$

    A) $\left\{\dfrac{4}{7}, -1\right\}$ B) $\left\{\dfrac{7}{4}, -1\right\}$ C) $\left\{\dfrac{4}{7}, 0\right\}$ D) $\left\{\dfrac{4}{7}, 1\right\}$

Answer: B

Solve the problem.

186) Which one of the following equations is set up for direct use of the square root property?

    A) $(3x + 5)^2 = 6$ B) $x^2 + x = 6$

    C) $(3x + 5)(x + 6) = 0$ D) $3x^2 + 5x + 6 = 0$

Answer: A

Solve the equation by the square root property.

187) $x^2 = 169$

    A) $\{\pm 13i\}$ B) $\{13\}$ C) $\{\pm 13\}$ D) $\{84.5\}$

Answer: C

188) $x^2 = -25$

    A) $\{\pm 5i\}$ B) $\{\pm 5\}$ C) $\{5\}$ D) $\{12.5\}$

Answer: A

189) $x^2 = 18$

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

Answer: B

190) $(x - 4)^2 = 4$

    A) $\{2, 6\}$ B) $\{-2, -6\}$ C) $\{6\}$ D) $\{0\}$

Answer: A

191) $(x + 7)^2 = 5$

    A) $\{\sqrt{5} + 7, -\sqrt{5 + 7}\}$ B) $\{\sqrt{5} - \sqrt{7}\}$

    C) $\{-7 \pm \sqrt{5}\}$ D) $\{-7 + \sqrt{5}\}$

    Answer: C

191) ____

192) $(8x + 9)^2 = 4$

    A) $\left\{\dfrac{5}{8}\right\}$ B) $\left\{-\dfrac{7}{8}, -\dfrac{11}{8}\right\}$ C) $\left\{\dfrac{7}{8}, \dfrac{11}{8}\right\}$ D) $\left\{-\dfrac{7}{8}, 0\right\}$

    Answer: B

192) ____

193) $(9x - 9)^2 = 3$

    A) $\left\{\pm\dfrac{\sqrt{3}}{9}i\right\}$ B) $\{9 \pm \sqrt{3}\}$ C) $\left\{\dfrac{9 + \sqrt{3}}{9}\right\}$ D) $\left\{\dfrac{9 \pm \sqrt{3}}{9}\right\}$

    Answer: D

193) ____

194) $(x + 9)^2 = -6$

    A) $\{-9 \pm \sqrt{6}\}$ B) $\{-9 \pm i\sqrt{6}\}$ C) $\{-3 - \sqrt{6}\}$ D) $\{-3, 15\}$

    Answer: B

194) ____

Solve the problem.

195) Only one of the following equations does not require Step 1 of the method for completing the square. Which one is it?

    A) $(3x + 5)(x - 7) = 0$ B) $(3x + 5)^2 = 7$

    C) $x^2 + x = 7$ D) $3x^2 + 5x - 7 = 0$

    Answer: C

195) ____

Solve the equation by completing the square.

196) $x^2 + 10x + 16 = 0$

    A) $\{24, -8\}$ B) $\{\pm 4\}$ C) $\{-2, -8\}$ D) $\{2, 8\}$

    Answer: C

196) ____

197) $x^2 + 3x - 9 = 0$

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

    Answer: B

197) ____

198) $x^2 + 4x + 8 = 0$

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

    Answer: D

198) ____

199) $2x^2 + 7x + 3 = 0$

    A) $\left\{-3, -\dfrac{1}{2}\right\}$ B) $\left\{\dfrac{-7 \pm 2\sqrt{6}}{4}\right\}$ C) $\{3, -1\}$ D) $\left\{-2 \pm \dfrac{\sqrt{3}}{2}i\right\}$

    Answer: A

199) ____

22

200) $4x^2 - 4x - 8 = 0$ 200) _____

A) $\left\{\dfrac{1}{2}, 1\right\}$ B) $\left\{\dfrac{1}{2}, 0\right\}$ C) $\left\{\dfrac{1}{2}, -1\right\}$ D) $\{2, -1\}$

Answer: D

201) $x^2 + 12x = -32$ 201) _____

A) $\{-4, 8\}$ B) $\{4, -8\}$ C) $\{-4, -8\}$ D) $\{4, 8\}$

Answer: C

202) $x^2 + 8x = 7$ 202) _____

A) $\{-4 \pm \sqrt{23}\}$ B) $\{-1 \pm \sqrt{23}\}$ C) $\{-4 \pm 1\sqrt{23}\}$ D) $\{4 + \sqrt{23}\}$

Answer: A

203) $3x^2 - 7x = 1$ 203) _____

A) $\left\{-\dfrac{7}{6} \pm \dfrac{\sqrt{61}}{6}i\right\}$ B) $\left\{\dfrac{7}{6} \pm \dfrac{\sqrt{61}}{6}i\right\}$ C) $\left\{\dfrac{-7 \pm \sqrt{61}}{6}\right\}$ D) $\left\{\dfrac{7 \pm \sqrt{61}}{6}\right\}$

Answer: D

204) $8x^2 + 7x = -2$ 204) _____

A) $\left\{\dfrac{-7 \pm \sqrt{15}}{16}\right\}$ B) $\left\{\dfrac{7}{16} \pm \dfrac{\sqrt{15}}{16}i\right\}$ C) $\left\{\dfrac{7 \pm \sqrt{15}}{16}\right\}$ D) $\left\{-\dfrac{7}{16} \pm \dfrac{\sqrt{15}}{16}i\right\}$

Answer: D

205) $x^2 = 7 - 4x$ 205) _____

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

Answer: D

Solve the equation using the quadratic formula.

206) $x^2 - 4x + 20 = 0$ 206) _____

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

Answer: D

207) $x^2 + x + 5 = 0$ 207) _____

A) $\left\{-\dfrac{1}{2} \pm \dfrac{\sqrt{19}}{2}i\right\}$ B) $\left\{\dfrac{1}{2} \pm \dfrac{\sqrt{19}}{2}i\right\}$

C) $\left\{\dfrac{-1 \pm \sqrt{19}}{2}\right\}$ D) $\left\{\dfrac{1 \pm \sqrt{19}}{2}\right\}$

Answer: A

208) $6x^2 + 12x + 3 = 0$ 208) _____

A) $\left\{\dfrac{-2 \pm \sqrt{6}}{2}\right\}$ B) $\left\{\dfrac{-2 \pm \sqrt{2}}{12}\right\}$ C) $\left\{\dfrac{-12 \pm \sqrt{2}}{2}\right\}$ D) $\left\{\dfrac{-2 \pm \sqrt{2}}{2}\right\}$

Answer: D

209) $6x^2 + 12x = -2$

A) $\left\{\dfrac{-3 \pm \sqrt{3}}{3}\right\}$

B) $\left\{\dfrac{-12 \pm \sqrt{6}}{3}\right\}$

C) $\left\{\dfrac{-3 \pm \sqrt{6}}{3}\right\}$

D) $\left\{\dfrac{-3 \pm \sqrt{6}}{12}\right\}$

209) _____

Answer: C

210) $3x^2 = -8x - 1$

A) $\left\{\dfrac{-4 \pm \sqrt{13}}{3}\right\}$

B) $\left\{\dfrac{-4 \pm \sqrt{19}}{3}\right\}$

C) $\left\{\dfrac{-4 \pm \sqrt{13}}{6}\right\}$

D) $\left\{\dfrac{-8 \pm \sqrt{13}}{3}\right\}$

210) _____

Answer: A

211) $\dfrac{4}{9}x^2 - \dfrac{4}{3}x = -1$

A) $\left\{-\dfrac{3}{2}\right\}$

B) $\left\{\dfrac{3}{2}\right\}$

C) $\left\{\dfrac{2}{3}\right\}$

D) $\left\{\dfrac{3 \pm 2\sqrt{2}}{2}\right\}$

211) _____

Answer: B

212) $6 = -\dfrac{6}{x} - \dfrac{1}{x^2}$

A) $\left\{\dfrac{-3 \pm \sqrt{3}}{6}\right\}$

B) $\left\{\dfrac{-3 \pm \sqrt{3}}{12}\right\}$

C) $\left\{\dfrac{-3 \pm \sqrt{15}}{6}\right\}$

D) $\left\{\dfrac{-6 \pm \sqrt{3}}{6}\right\}$

212) _____

Answer: A

213) $(x + 1)(x - 4) = 2$

A) $\left\{\dfrac{3}{2} \pm \dfrac{i\sqrt{33}}{2}\right\}$

B) $\left\{\dfrac{-3 \pm \sqrt{33}}{2}\right\}$

C) $\left\{\dfrac{3 \pm \sqrt{33}}{2}\right\}$

D) $\left\{-\dfrac{3}{2} \pm \dfrac{i\sqrt{33}}{2}\right\}$

213) _____

Answer: C

214) $(2x - 1)(x + 1) = 6$

A) $\left\{\dfrac{-1 \pm \sqrt{57}}{4}\right\}$

B) $\left\{\dfrac{1 \pm \sqrt{57}}{2}\right\}$

C) $\left\{\dfrac{-1 \pm \sqrt{17}}{2}\right\}$

D) $\left\{\dfrac{1 \pm \sqrt{57}}{4}\right\}$

214) _____

Answer: A

Solve the cubic equation using factoring and the quadratic formula.

215) $x^3 + 1 = 0$

A) $\{-1, \pm i\}$

B) $\{-1, -1 \pm i\sqrt{3}\}$

C) $\left\{-1, \dfrac{1}{2} \pm \dfrac{\sqrt{3}}{2}i\right\}$

D) $\{-1, 1 \pm i\sqrt{3}\}$

215) _____

Answer: C

216) $x^3 - 1 = 0$

A) $\left\{1, -\dfrac{1}{2} \pm \dfrac{\sqrt{3}}{2}i\right\}$

B) $\{1, -1 \pm i\sqrt{3}\}$

C) $\{1, 1 \pm i\sqrt{3}\}$

D) $\{1, \pm i\}$

216) _____

Answer: A

217) $x^3 + 8 = 0$ 217) _____

    A) $\{-2, 1 \pm i\sqrt{6}\}$ B) $\{-2, 1 \pm i\sqrt{3}\}$ C) $\{-2, \pm 2i\}$ D) $\{-2, -1 \pm \sqrt{5}\}$

    Answer: B

218) $x^3 - 8 = 0$ 218) _____

    A) $\{2, -1 \pm i\sqrt{3}\}$ B) $\{2, -1 \pm \sqrt{5}\}$ C) $\{2, \pm 2i\}$ D) $\{2, 1 \pm i\sqrt{6}\}$

    Answer: A

219) $x^3 + 64 = 0$ 219) _____

    A) $\{-4, 2 \pm 2i\sqrt{3}\}$ B) $\{-4, -2 \pm 2i\sqrt{6}\}$ C) $\{-4, 2 \pm 2i\sqrt{5}\}$ D) $\{-4, -2 \pm 2i\}$

    Answer: A

220) $x^3 - 64 = 0$ 220) _____

    A) $\{4, -2 \pm 2i\}$ B) $\{4, 2 \pm 2i\sqrt{6}\}$ C) $\{4, 2 \pm 2\sqrt{5}\}$ D) $\{4, -2 \pm 2i\sqrt{3}\}$

    Answer: D

Solve the equation.

221) $x^2 = 4$ 221) _____

    A) $\pm 2i$ B) $\pm i\sqrt{2}$ C) $\pm\sqrt{2}$ D) ± 2

    Answer: D

222) $x^2 = -4$ 222) _____

    A) ± 2 B) $\pm i\sqrt{2}$ C) $\pm\sqrt{2}$ D) $\pm 2i$

    Answer: D

223) $x^2 - 11 = 0$ 223) _____

    A) $\pm i\sqrt{11}$ B) $\pm\sqrt{11}$ C) ± 11 D) $\pm 11i$

    Answer: B

224) $x^2 + 15 = 0$ 224) _____

    A) $\pm i\sqrt{15}$ B) $\pm 15i$ C) ± 15 D) $\pm\sqrt{15}$

    Answer: A

225) $x^2 = 20$ 225) _____

    A) $\pm 4i\sqrt{5}$ B) $\pm 2i\sqrt{5}$ C) $\pm 4\sqrt{5}$ D) $\pm 2\sqrt{5}$

    Answer: D

226) $x^2 = -18$ 226) _____

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

    Answer: C

227) $x - 19 = 0$ 227) _____

    A) 19 B) ± 19 C) -19 D) $\sqrt{19}$

    Answer: A

228) x + 7 = 0

    A) $-i\sqrt{7}$ B) -7   C) $i\sqrt{7}$ D) 7

228) _____

    Answer: B

Solve the problem.

229) Only one of the following equations is set up so that the values of a, b, and c can be determined immediately. Which one is it?

    A) $2x^2 + 5x + 1 = 0$ B) $(2x + 5)(x + 1) = 0$
    C) $(2x + 5)^2 = 1$ D) $x^2 + x = 1$

229) _____

    Answer: A

Solve the equation for the indicated variable. Assume no denominator is 0.

230) $M = \pi r^2 hd$, for r

    A) $r = \dfrac{\pm\sqrt{\pi Mhd}}{hd}$ B) $r = \dfrac{\pm M\sqrt{\pi hd}}{\pi hd}$ C) $r = \dfrac{\pm\sqrt{M\pi hd}}{\pi hd}$ D) $r = \pm\sqrt{\pi Mhd}$

230) _____

    Answer: C

231) $A = 3\pi a^2$, for a

    A) $a = \dfrac{\pm\sqrt{A\pi}}{3}$ B) $a = \dfrac{\pm\sqrt{3\pi A}}{3\pi}$ C) $a = \sqrt{3\pi A}$ D) $a = \dfrac{\pm A\sqrt{3\pi}}{3\pi}$

231) _____

    Answer: B

232) $Ve = \dfrac{1}{2}mv^2$, for v

    A) $v = \dfrac{\pm\sqrt{2mVe}}{m}$ B) $v = \pm 2\dfrac{\sqrt{Ve}}{m}$ C) $v = \pm\sqrt{\dfrac{Ve}{2m}}$ D) $v = \pm\sqrt{2Ve}$

232) _____

    Answer: A

233) $rm = t^2 - mt$, for t

    A) $t = \dfrac{m \pm \sqrt{m^2 + 4mr}}{2m}$ B) $t = \dfrac{m \pm \sqrt{m^2 - 4mr}}{4}$

    C) $t = \dfrac{m \pm \sqrt{m^2 + 4rm}}{2}$ D) $t = \sqrt{mr - m}$

233) _____

    Answer: C

234) $2x^2 - 4xy + 3y^2 = 1$, for x

    A) $x = \dfrac{2y \pm \sqrt{2 - 2y^2}}{2}$ B) $x = y \pm (1 - y)$

    C) $x = -y \pm \sqrt{1 - y^2}$ D) $x = -y \pm 2\sqrt{1 - y^2}$

234) _____

    Answer: A

235) $2x^2 - 4xy + 3y^2 = 1$, for y

    A) $y = \dfrac{2x \pm 4\sqrt{3 - 2x^2}}{3}$

    B) $y = \dfrac{2x \pm \sqrt{3 - 2x^2}}{3}$

    C) $y = \dfrac{2x \pm \sqrt{6 - 4x^2}}{3}$

    D) $y = \dfrac{2x \pm 2\sqrt{3 - 2x^2}}{3}$

235) _____

Answer: B

Evaluate the discriminant for the equation. Then use it to predict the number of distinct solutions, and whether they are rational, irrational, or nonreal complex.

236) $s^2 + 4s + 3 = 0$

    A) Two distinct nonreal complex solutions   B) Two distinct irrational solutions

    C) Two distinct rational solutions   D) One rational solution (a double solution)

Answer: C

236) _____

237) $t^2 + 12t + 36 = 0$

    A) Two distinct irrational solutions   B) Two distinct nonreal complex solutions

    C) One rational solution (a double solution)   D) Two distinct rational solutions

Answer: C

237) _____

238) $v^2 - 4v - 7 = 0$

    A) One rational solution (a double solution)   B) Two distinct irrational solutions

    C) Two distinct nonreal complex solutions   D) Two distinct rational solutions

Answer: B

238) _____

239) $w^2 - 3w + 8 = 0$

    A) Two distinct rational solutions   B) Two distinct irrational solutions

    C) One rational solution (a double solution)   D) Two distinct nonreal complex solutions

Answer: D

239) _____

240) $16x^2 + 8x + 1 = 0$

    A) Two distinct nonreal complex solutions   B) Two distinct rational solutions

    C) Two distinct irrational solutions   D) One rational solution (a double solution)

Answer: D

240) _____

241) $8y^2 = -7y - 7$

    A) Two distinct irrational solutions   B) Two distinct rational solutions

    C) One rational solution (a double solution)   D) Two distinct nonreal complex solutions

Answer: D

241) _____

242) $6 + 4z^2 = -8z$

    A) Two distinct nonreal complex solutions   B) Two distinct rational solutions

    C) One rational solution (a double solution)   D) Two distinct irrational solutions

Answer: A

242) _____

243) $4 - 6a^2 = -2a + 1$

    A) Two distinct irrational solutions   B) Two distinct nonreal complex solutions

    C) One rational solution (a double solution)   D) Two distinct rational solutions

Answer: A

243) _____

Find the values of a, b, and c for which the quadratic equation $ax^2 + bx + c = 0$ has the given numbers as solutions. Then use those values to write a quadratic equation.

244) 8, 6

244) _____

   A) $x^2 + 48x - 14 = 0$ B) $x^2 - 14x + 48 = 0$

   C) $x^2 + 14x + 48 = 0$ D) $x^2 + 48x + 14 = 0$

Answer: B

245) -2, -8

245) _____

   A) $x^2 + 10x + 16 = 0$ B) $x^2 + 16x - 10 = 0$

   C) $x^2 - 10x + 16 = 0$ D) $x^2 + 16x + 10 = 0$

Answer: A

246) 3, -9

246) _____

   A) $x^2 - 27x + 6 = 0$ B) $x^2 - 6x - 27 = 0$ C) $x^2 - 27x - 6 = 0$ D) $x^2 + 6x - 27 = 0$

Answer: D

247) -4, 8

247) _____

   A) $x^2 + 4x - 32 = 0$ B) $x^2 - 4x - 32 = 0$ C) $x^2 - 32x - 4 = 0$ D) $x^2 - 32x + 4 = 0$

Answer: B

248) $8 + \sqrt{11}, 8 - \sqrt{11}$

248) _____

   A) $x^2 + 16x + 53 = 0$ B) $x^2 + 64x + 75 = 0$

   C) $x^2 - 16x + 53 = 0$ D) $x^2 - 16x + 75 = 0$

Answer: C

249) $8 + 4\sqrt{2}, 8 - 4\sqrt{2}$

249) _____

   A) $x^2 - 32x + 16 = 0$ B) $x^2 - 8x + 56 = 0$

   C) $x^2 - 64x + 96 = 0$ D) $x^2 - 16x + 32 = 0$

Answer: D

250) 4i, -4i

250) _____

   A) $x^2 - 8 - 16 = 0$ B) $x^2 - 16 = 0$ C) $x^2 + 8 + 16 = 0$ D) $x^2 + 16 = 0$

Answer: D

251) 16i, -16i

251) _____

   A) $x^2 + 256 = 0$ B) $x^2 + 32 + 256 = 0$

   C) $x^2 - 256 = 0$ D) $x^2 - 32 - 256 = 0$

Answer: A

Solve the problem.

252) Find two consecutive integers whose product is 380.

252) _____

   A) -19, -20   B) 19, 20

   C) 19, -20   D) 19, 20 or -19, -20

Answer: D

253) Find two consecutive even integers whose product is 1520.　　253) _____
    A) 38, -40　　　　　　　　　　　　　　　B) 38, 40
    C) 38, 40 or -38, -40　　　　　　　　　　D) -38, -40

    Answer: C

254) Find two consecutive odd integers whose product is 483.　　254) _____
    A) 21, 23 or -21, -23　　　　　　　　　B) -21, -23
    C) 21, 23　　　　　　　　　　　　　　　D) 21, -23

    Answer: A

255) The sum of the squares of two consecutive integers is 221. Find the integers.　　255) _____
    A) 10, -11　　　　　　　　　　　　　　B) 10, 11 or -10, -11
    C) 10, 11　　　　　　　　　　　　　　　D) -10, -11

    Answer: B

256) The sum of the squares of two consecutive even integers is 2452. Find the integers.　　256) _____
    A) 34, 36 or -34, -36　　　　　　　　　B) -34, -36
    C) 34, 36　　　　　　　　　　　　　　　D) 35, -37

    Answer: A

257) The sum of the squares of two consecutive odd integers is 1802. Find the integers.　　257) _____
    A) 29, 31　　　　　　　　　　　　　　　B) 29, 31 or -29, -31
    C) 29, -31　　　　　　　　　　　　　　D) -29, -31

    Answer: B

258) The difference of the squares of two positive consecutive even integers is 68. Find the integers.　　258) _____
    A) 14, 12　　　　　B) 16, 14　　　　　C) 16, 18　　　　　D) 18, 20

    Answer: C

Answer the question.

259) The mat around the picture shown measures x inches across. Which one of the following equations　　259) _____
    says that the area of the picture itself is 700 square inches?
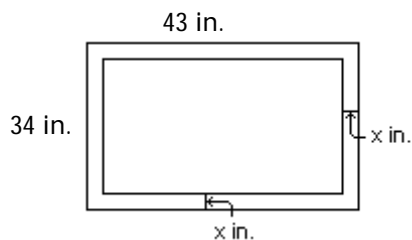
    A) $(43)(34) - x^2 = 700$　　　　　　　B) $2(43 - 2x) + 2(34 - 2x) = 700$
    C) $(43 - 2x)(34 - 2x) = 700$　　　　　D) $(43 - x)(34 - x) = 700$

    Answer: C

Solve the problem.

260) The length of a rectangle is 6 inches more than its width. If 3 inches are taken from the length and added to the width, the figure becomes a square with an area of 361 square inches. What are the dimensions of the original figure?

    A) 16 in. by 19 in.   B) 13 in. by 19 in.   C) 19 in. by 19 in.   D) 16 in. by 22 in.

Answer: D

    260) _____

261) The outside of a picture frame has a length which is 3 cm more than width. The area enclosed by the outside of the picture frame is 130 square cm. Find the width of the outside of the picture frame.

    A) 16 cm   B) 10 cm   C) 13 cm   D) 11 cm

Answer: B

    261) _____

262) The area of a square is numerically 117 more than the perimeter. Find the length of the side.

    A) 85 units   B) 338 units   C) 52 units   D) 13 units

Answer: D

    262) _____

263) The area of a square is numerically 4 less than the perimeter. Find the length of the side, if the side is greater than 1.

    A) 9 units   B) 5 units   C) 8 units   D) 2 units

Answer: D

    263) _____

264) The height of a box is 7 inches. The length is three inches more than the width. Find the width if the volume is 280.

    A) 40 in.   B) 5 in.   C) 8 in.   D) 7 in.

Answer: B

    264) _____

265) The height of a box is 10 inches. Its length is 4 inches more than its width. Find the length if the volume is 320.

    A) 10 in.   B) 4 in.   C) 32 in.   D) 8 in.

Answer: D

    265) _____

266) A 15 in by 25 in rectangular garden is to have a gravel path of uniform width bordering it. How wide is the path if the total area covered by the garden and path is 551 in^2?

    A) 3 in   B) 1 in   C) 3.5 in   D) 2 in

Answer: D

    266) _____

267) A rug is to fit in a room so that a border of even width is left on all four sides. If the room is 12 feet by 15 feet and the area of the rug is 108 square feet, how wide will the border be?

    A) 2.2 ft   B) 1.5 ft   C) 3 ft   D) 1 ft

Answer: B

    267) _____

268) A can has a surface area of 831 square inches. Its height is 5.67 inches. What is the radius of the circular top? Round to the nearest hundredth.

    A) 11.55 in.   B) 9.01 in.   C) 23.33 in.   D) 4.45 in.

Answer: B

    268) _____

269) A square lawn has an area of 882 square feet. A sprinkler placed at the center of the lawn sprays a water in a circular pattern that just covers the lawn. What is the radius of the circle?

    A) 29.7 ft   B) 42 ft   C) 14.85 ft   D) 21 ft

Answer: D

    269) _____

Answer the question.

270) If a rectangle is x feet long and y feet wide, which one of the following expressions is the length of its diagonal in terms of x and y?

    A) $\sqrt{x + y}$ B) $x^2 + y^2$ C) $\sqrt{x^2 + y^2}$ D) $x + y$

270) _____

Answer: C

271) To solve for the lengths of the right triangle sides, which equation is correct?

271) _____
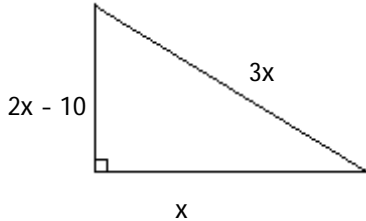
A) $(2x - 10)^2 = x^2 + (3x)^2$ B) $x^2 = (3x)^2 + (2x - 10)^2$

C) $(2x - 10)^2 + x^2 = (3x)^2$ D) $x^2 + (3x)^2 = (2x - 10)^2$

Answer: C

Solve the problem.

272) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 6 mi, the distance between the cars was 2 mi more than the distance traveled by the car heading east. How far had the east bound car traveled?

    A) 10 mi   B) 6 mi   C) 8 mi   D) 12 mi

272) _____

Answer: C

273) A ladder is resting against a wall. The top of the ladder touches the wall at a height of 6 ft. Find the length of the ladder if the length is 2 ft more than its distance from the wall.

    A) 6 ft   B) 10 ft   C) 12 ft   D) 8 ft

273) _____

Answer: B

274) A lot is in the shape of a right triangle. The shorter leg measures 180 m. The hypotenuse is 60 m longer than the length of the longer leg. How long is the longer leg?

    A) 180 m   B) 240 m   C) 300 m   D) 360 m

274) _____

Answer: B

275) A boat is 180 feet from the base of cliff. If the distance from the top of the cliff to the boat is 45 more than twice the height of the cliff. Find the height of the cliff. Round to the nearest tenth of a foot if necessary.

    A) 100.6 ft   B) 45 ft   C) 75 ft   D) 135 ft

275) _____

Answer: C

276) A boat is 40 feet from the base of cliff. If the distance from the top of the cliff to the boat is 10 less than twice the height of the cliff to the water. Find the height of the cliff. Round to the nearest tenth of a foot if necessary.

    A) 50 ft   B) 30 ft   C) 23.3 ft   D) 16.7 ft

276) _____

Answer: B

277) A building needs a ramp to make it handicap accessible. By law, the ramp must run 10 inches   277) _____
horizontally for every 1 inch of rise. If the surface of the ramp is 78 inches long how far above the
ground is the inclined end of the ramp? Round to the nearest tenth of an inch.
   A) 5.0 in.   B) 26.0 in.   C) 7.8 in.   D) 7.1 in.

Answer: C

278) A ball is dropped from a cliff that is 432 feet high. The distance S (in feet) that it falls in t seconds is   278) _____
given by the formula $S = 16t^2$. How many seconds (to tenths) will it take for the ball to hit the
ground?
   A) 11,664 sec   B) 5.2 sec   C) 20.4 sec   D) 20.8 sec

Answer: B

279) A rock falls from a tower that is 464 feet high. As it is falling, its height is given by the formula   279) _____
$h = 464 - 16t^2$. How many seconds (in tenths) will it take for the rock to hit the ground (h = 0)?
   A) 5.4 sec   B) 21.2 sec   C) 13,456 sec   D) 21.5 sec

Answer: A

280) A rock falls from a tower that is 68.6 m high. As it is falling, its height is given by the formula   280) _____
$h = 68.6 - 4.9t^2$, with t in seconds. How many seconds will it take for the rock to hit the ground (h =
0)?
   A) 8 sec   B) 3.7 sec   C) 8.3 sec   D) 960.4 sec

Answer: B

281) The position of an object moving in a straight line is given by $s = 2t^2 - 3t$, where s is in meters and t   281) _____
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) 21.0 sec   B) 3.8 sec   C) 74.0 sec   D) 4.0 sec

Answer: D

282) A ball is thrown downward from a window in a tall building. Its position at time t in seconds is   282) _____
$s = 16t^2 + 32t$, where s is in feet. How long (to the nearest tenth) will it take the ball to fall 140 feet?
   A) 4.4 sec   B) 3.0 sec   C) 2.1 sec   D) 1.9 sec

Answer: C

283) Your company uses the quadratic model $y = -11x^2 + 350x$ to represent how many units (y) of a   283) _____
new product will be sold (x) weeks after its release . How many units can you expect to sell in
week 6?
   A) 2166 units   B) 2034 units   C) 1704 units   D) 2496 units

Answer: C

284) Your company uses the quadratic model $y = -4.5x^2 + 150x$ to represent the average number of new   284) _____
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 16?
   A) 2328 customers   B) 624 customers   C) 48 customers   D) 1248 customers

Answer: D

285) 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 $5000 grows to $6050.00 in two years, what is the interest rate?

    A) 11%   B) 8%   C) 12%   D) 10%

285) _____

Answer: D

286) The stadium vending company finds that sales of hot dogs average 48,000 hot dogs per game when the hot dogs sell for $2.50 each. For each 50 cent increase in the price, the sales per game drop by 5000 hot dogs. What price per hot dog should the vending company charge to realize the maximum revenue?

    A) $3.90   B) $2.30   C) $4.80   D) $3.65

286) _____

Answer: D

Decide what values of the variable cannot possibly be solutions for the equation.

287) $\dfrac{1}{2x} + \dfrac{9}{x} = 12$

    A) -2   B) 0   C) 1, 2   D) $0, -\dfrac{1}{2}$

287) _____

Answer: B

288) $\dfrac{1}{x - 3} - \dfrac{1}{x + 7} = 12$

    A) -7, 3   B) $-\dfrac{1}{7}, \dfrac{1}{3}$ C) -3, 7   D) $-\dfrac{1}{3}, \dfrac{1}{7}$

288) _____

Answer: A

289) $\dfrac{5}{x - 1} - \dfrac{8x}{1 - x} = 10$

    A) -1, 1   B) 1   C) -1, 0, 1   D) -1, 0

289) _____

Answer: B

290) $\dfrac{x}{x - 2} + \dfrac{11x}{7x + 7} = 0$

    A) -7, 2   B) -2, 0, 1   C) -2, 7   D) -1, 2

290) _____

Answer: D

291) $\dfrac{x}{x - 3} + \dfrac{1}{x + 9} = \dfrac{12}{x^2 + 6x - 27}$

    A) -9, 3   B) -3, 0, 9   C) -3, 9, -27   D) -9, 0, 3

291) _____

Answer: A

Solve the equation.

292) $\dfrac{1}{x} + \dfrac{2}{11x} = 8$

    A) ∅   B) $\left\{\dfrac{3}{8}\right\}$ C) $\left\{\dfrac{13}{8}\right\}$ D) $\left\{\dfrac{13}{88}\right\}$

292) _____

Answer: D

293) $\dfrac{2}{11x} - 2 = \dfrac{3}{14x}$

    A) $\left\{-\dfrac{5}{308}\right\}$ B) $\left\{-\dfrac{3}{2}\right\}$ C) $\varnothing$ D) $\left\{-\dfrac{5}{2}\right\}$

    Answer: A

293) _____

294) $\dfrac{3x + 8}{3} - \dfrac{4x}{x - 3} = x$

    A) $\{-6\}$ B) $\left\{-\dfrac{3}{11}\right\}$ C) $\{-2\}$ D) $\left\{\dfrac{6}{5}\right\}$

    Answer: A

294) _____

295) $\dfrac{-4}{x - 8} + \dfrac{8}{x + 8} = \dfrac{-64}{x^2 - 64}$

    A) $\{-8\}$ B) $\{-6\}$ C) $\varnothing$ D) $\{8\}$

    Answer: C

295) _____

296) $\dfrac{3}{x - 9} + \dfrac{7}{x + 6} = \dfrac{5}{x^2 - 3x - 54}$

    A) $\left\{\dfrac{65}{7}\right\}$ B) $\{5\}$ C) $\left\{-\dfrac{16}{3}\right\}$ D) $\varnothing$

    Answer: B

296) _____

297) $\dfrac{5}{x - 5} + \dfrac{14}{x - 8} = \dfrac{16}{x^2 - 13x + 40}$

    A) $\varnothing$ B) $\left\{\dfrac{126}{19}\right\}$ C) $\left\{\dfrac{94}{19}\right\}$ D) $\left\{-\dfrac{33}{13}\right\}$

    Answer: B

297) _____

298) $\dfrac{x}{x - 7} = \dfrac{7}{x - 7} + 7$

    A) $\{7\}$ B) $\{-7\}$ C) $\varnothing$ D) $\{0\}$

    Answer: C

298) _____

299) $\dfrac{5}{x^2 - 4} - \dfrac{3}{x^2 + 5x + 6} = \dfrac{3}{x^2 + x - 6}$

    A) $\left\{\dfrac{27}{5}\right\}$ B) $\{-3, -2, 2\}$ C) $\{7\}$ D) $\{15\}$

    Answer: D

299) _____

300) $1 - \dfrac{7}{x} - \dfrac{30}{x^2} = 0$

    A) $\{-10, -3\}$ B) $\{10, 3\}$ C) $\{-10, 3\}$ D) $\{10, -3\}$

    Answer: D

300) _____

301) $\dfrac{7}{x-4} = 1 + \dfrac{9}{x+4}$

    A) $\varnothing$ B) $\{-9, 10\}$ C) $\{8, -10\}$ D) $\{-8, 10\}$

    Answer: C

301) _____

302) $\dfrac{16}{x+2} = 1 + \dfrac{2}{x-4}$

    A) $\{-12\}$ B) $\varnothing$ C) $\{6, 10\}$ D) $\{-2, 4\}$

    Answer: C

302) _____

303) $1 + \dfrac{1}{x} = \dfrac{6}{x^2}$

    A) $\{-3, 2\}$ B) $\left\{-\dfrac{1}{3}, \dfrac{1}{2}\right\}$ C) $\{2, 3\}$ D) $\{-2, 3\}$

    Answer: A

303) _____

304) $\dfrac{8}{x-2} + \dfrac{8}{x+2} = 3$

    A) $\left\{\dfrac{2}{3}, -6\right\}$ B) $\left\{-\dfrac{2}{3}, 6\right\}$ C) $\left\{-\dfrac{3}{2}, -6\right\}$ D) $\{2, 6\}$

    Answer: B

304) _____

305) $\dfrac{6}{x+5} = 1 - \dfrac{1}{x-5}$

    A) $\varnothing$ B) $\{0, 7\}$ C) $\{0, -5\}$ D) $\{1, 5\}$

    Answer: B

305) _____

306) $\dfrac{-5x^2 - 6}{x-4} = \dfrac{-15x}{x-4} + 6$

    A) $\left\{-\dfrac{6}{5}, 3\right\}$ B) $\left\{\dfrac{6}{5}, -3\right\}$ C) $\{3\}$ D) $\left\{\dfrac{-5 \pm \sqrt{105}}{3}\right\}$

    Answer: A

306) _____

307) $\dfrac{7x}{x-7} - \dfrac{4}{x} = \dfrac{28}{x^2 - 7x}$

    A) $\left\{\dfrac{4}{7}\right\}$ B) $\left\{\dfrac{7}{4}\right\}$ C) $\left\{0, \dfrac{4}{7}\right\}$ D) $\left\{\dfrac{4}{7}, -\dfrac{4}{7}\right\}$

    Answer: A

307) _____

308) $\dfrac{x}{x-8} - \dfrac{8}{x+8} = \dfrac{128}{x^2 - 64}$

    A) $\varnothing$ B) $\left\{\dfrac{1}{8}\right\}$ C) $\{\pm 8\}$ D) $\{\pm 8i\}$

    Answer: A

308) _____

309) $\dfrac{x + 35}{10} = \dfrac{5x - 5}{x}$

309) _____

    A) $\left\{\dfrac{50}{13}\right\}$ B) {-5, -10}   C) {5, 10}   D) $\left\{\dfrac{95}{49}\right\}$

Answer: C

Solve the problem.

310) Martha can rake the leaves in her yard in 6 hours. Her brother can do the job in 8 hours. How long will it take them to do the job working together?

310) _____

    A) $\dfrac{24}{7}$ hr   B) $\dfrac{48}{2}$ hr   C) $\dfrac{1}{14}$ hr   D) $\dfrac{1}{48}$ hr

Answer: A

311) One maid can clean the house in 8 hours. Another maid can do the job in 6 hours. How long will it take them to do the job working together?

311) _____

    A) $\dfrac{24}{7}$ hr   B) $\dfrac{48}{2}$ hr   C) $\dfrac{1}{14}$ hr   D) $\dfrac{1}{48}$ hr

Answer: A

312) Frank can type a report in 7 hours. James takes 2 hours to type it. How long will it take the two of them typing together?

312) _____

    A) $\dfrac{14}{5}$ hr   B) $\dfrac{1}{9}$ hr   C) $\dfrac{1}{14}$ hr   D) $\dfrac{14}{9}$ hr

Answer: D

313) An experienced accountant can prepare a tax return in 13 hours. A novice accountant can do the job in 19 hours. How long will it take them to do the job working together?

313) _____

    A) $\dfrac{247}{32}$ hr   B) $\dfrac{1}{247}$ hr   C) $\dfrac{1}{32}$ hr   D) $\dfrac{247}{6}$ hr

Answer: A

314) A water tank can be filled in 9 minutes and emptied in 10 minutes. If the drain is accidentally left open when the tank is being filled, how long does it take to fill the tank?

314) _____

    A) $\dfrac{1}{19}$ min   B) $\dfrac{1}{90}$ min   C) $\dfrac{90}{19}$ min   D) 90 min

Answer: D

Solve the equation.

315) $x = \sqrt{2x + 24}$

315) _____

    A) {6}   B) {6, -4}   C) ∅   D) {2}

Answer: A

316) $\sqrt{x + 3} = x - 3$

316) _____

    A) {1, 13}   B) {1, 6}   C) {6}   D) {6, 13}

Answer: C

317) $\sqrt{x + 7} + 5 = x$

    A) {2}   B) {9, 18}   C) {9}   D) {2, 9}

317) _____

Answer: C

318) $\sqrt{3x + 10} = 5 - 2x$

    A) $\left\{ \dfrac{3}{4} \right\}$ B) $\left\{ \dfrac{5}{4}, 9 \right\}$ C) {5}   D) $\left\{ \dfrac{3}{4}, 5 \right\}$

318) _____

Answer: A

319) $\sqrt{2x + 15} - x = 6$

    A) {-7}   B) {-3}   C) {-7, -3}   D) $\varnothing$

319) _____

Answer: B

320) $16x = \sqrt{1 - 24x}$

    A) $\left\{ -\dfrac{1}{8} \right\}$ B) $\left\{ \dfrac{1}{16} \right\}$ C) $\left\{ \dfrac{1}{32} \right\}$ D) $\left\{ \dfrac{1}{8} \right\}$

320) _____

Answer: C

321) $\sqrt{3x + 1} = 3 + \sqrt{x - 4}$

    A) {5, 8}   B) $\varnothing$ C) {-5, -8}   D) {-1}

321) _____

Answer: A

322) $\sqrt{2x + 3} - \sqrt{x + 1} = 1$

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

322) _____

Answer: D

323) $\sqrt{2x + 5} - \sqrt{x - 2} = 3$

    A) {-2}   B) {2, 38}   C) {2}   D) {3, 8}

323) _____

Answer: B

324) $\sqrt{3x - 2} + \sqrt{11 + x} = -1$

    A) $\left\{ -\dfrac{5}{2} \right\}$ B) {5}   C) {0}   D) $\varnothing$

324) _____

Answer: D

325) $\sqrt{x + 6} + \sqrt{2 - x} = 4$

    A) {2, -2}   B) {0}   C) {$\sqrt{31}$, -2}   D) {-2}

325) _____

Answer: D

326) $\sqrt{10 + x} + \sqrt{11 - 5x} = -1$

    A) {0}   B) $\left\{ \dfrac{11}{2} \right\}$ C) {1}   D) $\varnothing$

326) _____

Answer: D

327) $\sqrt{2x + 3} + \sqrt{4 - x} = 4$

    A) {3}   B) {-3}   C) ∅   D) $\left\{3, \dfrac{11}{9}\right\}$

327) _____

Answer: D

328) $\sqrt{8x - 5} - \sqrt{3x + 9} = 0$

    A) $\left\{\dfrac{4}{5}\right\}$ B) $\left\{\dfrac{14}{11}\right\}$ C) $\left\{\dfrac{5}{14}\right\}$ D) $\left\{\dfrac{14}{5}\right\}$

328) _____

Answer: D

329) $4\sqrt{x} = \sqrt{9x + 9}$

    A) $\left\{\dfrac{9}{7}\right\}$ B) $\left\{-\dfrac{9}{8}\right\}$ C) $\left\{\dfrac{9}{25}\right\}$ D) $\left\{-\dfrac{9}{5}\right\}$

329) _____

Answer: A

330) $\sqrt[3]{x + 1} = 2$

    A) {8}   B) {3}   C) {7}   D) {1}

330) _____

Answer: C

331) $\sqrt[3]{4x + 4} = -3$

    A) $\left\{\dfrac{23}{4}\right\}$ B) $\left\{\dfrac{31}{4}\right\}$ C) $\left\{-\dfrac{31}{4}\right\}$ D) {-31}

331) _____

Answer: C

332) $\sqrt[4]{x^2 - 13} = 1$

    A) $\{-\sqrt{14}, \sqrt{14}\}$ B) $\{-\sqrt{13}, \sqrt{13}\}$ C) $\{\sqrt{13}\}$ D) $\{\sqrt{14}\}$

332) _____

Answer: A

333) $\sqrt[5]{2x + 3} = 5$

    A) {1561}   B) {3125}   C) $\left\{\dfrac{3125}{2}\right\}$ D) {3122}

333) _____

Answer: A

334) $\sqrt[3]{4x - 7} + 9 = 5$

    A) {-16}   B) $\left\{\dfrac{7}{4}\right\}$ C) $\left\{-\dfrac{57}{4}\right\}$ D) {-71}

334) _____

Answer: C

335) $\sqrt[3]{4x^2 - 7x - 3} = \sqrt[3]{4x^2 + 10x - 1}$

    A) $\left\{\dfrac{17}{2}\right\}$ B) $\left\{-\dfrac{17}{2}\right\}$ C) $\left\{-\dfrac{2}{17}\right\}$ D) $\left\{\dfrac{2}{17}\right\}$

335) _____

Answer: C

336) $\sqrt[3]{4 + 6x} - \sqrt[3]{1 - 8x} = 0$

A) $\left\{-\dfrac{14}{3}\right\}$
B) $\left\{\dfrac{3}{14}\right\}$
C) $\left\{\dfrac{14}{3}\right\}$
D) $\left\{-\dfrac{3}{14}\right\}$

336) _____

Answer: D

337) $\sqrt[4]{x - 5} + 4 = 0$

A) $\left\{\dfrac{4}{5}\right\}$
B) $\left\{\dfrac{256}{5}\right\}$
C) $\varnothing$
D) $\left\{-\dfrac{256}{5}\right\}$

337) _____

Answer: C

338) $\sqrt[4]{x + 3} = \sqrt[4]{10x}$

A) $\{3\}$
B) $\left\{\dfrac{3}{10}\right\}$
C) $\varnothing$
D) $\left\{\dfrac{1}{3}\right\}$

338) _____

Answer: D

339) $(x^2 + 2)^{1/2} - (2x + 5)^{1/2} = 0$

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

339) _____

Answer: C

340) $(x^2 - 3)^{1/2} - (x + 3)^{1/2} = 0$

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

340) _____

Answer: D

341) $(3x + 1)^{1/2} = 3 + (x - 4)^{1/2}$

A) $\{-5, -8\}$
B) $\varnothing$
C) $\{5, 8\}$
D) $\{-1\}$

341) _____

Answer: C

342) $(2x + 5)^{1/2} - (x - 2)^{1/2} = 3$

A) $\{-2\}$
B) $\{2\}$
C) $\{2, 38\}$
D) $\{3, 8\}$

342) _____

Answer: C

343) $(10 + x)^{1/2} + (11 - 5x)^{1/2} = -1$

A) $\left\{-1, \dfrac{10}{9}\right\}$
B) $\{0\}$
C) $\varnothing$
D) $\{1\}$

343) _____

Answer: C

344) $(2x + 3)^{1/2} + (4 - x)^{1/2} = 4$

A) $\{-3\}$
B) $\varnothing$
C) $\{3\}$
D) $\left\{3, \dfrac{11}{9}\right\}$

344) _____

Answer: D

345) $(-3 + 9x)^{1/3} + (10 + 2x)^{1/3} = 0$

A) $\left\{\dfrac{7}{11}\right\}$
B) $\varnothing$
C) $\left\{-\dfrac{7}{11}\right\}$
D) $\left\{-\dfrac{11}{7}\right\}$

345) _____

Answer: C

346) $(x - 2)^{1/4} + 9 = 0$

    A) $\varnothing$ B) $\left\{ \dfrac{6561}{2} \right\}$ C) $\left\{ -\dfrac{6561}{2} \right\}$ D) $\left\{ \dfrac{9}{2} \right\}$

346) _____

    Answer: A

347) $x^{2/3} = 4x^{1/3}$

    A) $\varnothing$ B) {0, 4}   C) {0, -64}   D) {0, 64}

347) _____

    Answer: D

348) $x^{1/2} = 2x^{1/4}$

    A) {0, 4}   B) {0, 2}   C) $\varnothing$ D) {0, 16}

348) _____

    Answer: D

349) $x^{1/2} = -3x^{1/4}$

    A) $\varnothing$ B) {0, -3}   C) {0}   D) {0, 9}

349) _____

    Answer: A

350) $(x + 10)^{2/5} = (49x)^{1/5}$

    A) {4, - 25}   B) $\left\{ -\dfrac{8}{27} \right\}$ C) {4, 25}   D) {-4, 25}

350) _____

    Answer: C

351) $6x^{2/5} + 23x^{1/5} + 20 = 0$

    A) {2, 3}   B) $\left\{ \dfrac{3125}{32}, \dfrac{1024}{243} \right\}$

    C) $\left\{ -\dfrac{3125}{32}, -\dfrac{1024}{243} \right\}$ D) $\left\{ -\dfrac{5}{2}, -\dfrac{4}{3} \right\}$

351) _____

    Answer: C

352) $(x + 3)^{2/3} - 2(x + 3)^{1/3} - 3 = 0$

    A) $\varnothing$ B) {-24, -4}   C) {24, -4}   D) {5, 1}

352) _____

    Answer: C

353) $25x^4 - 61x^2 + 36 = 0$

    A) $\left\{ -1, -\dfrac{5}{6} \right\}$ B) $\left\{ -\dfrac{6}{5}, -1, 1, \dfrac{6}{5} \right\}$ C) $\left\{ -1, -\dfrac{5}{6}, \dfrac{5}{6}, 1 \right\}$ D) $\left\{ 1, \dfrac{6}{5} \right\}$

353) _____

    Answer: B

354) $x^4 + 720 = 89x^2$

    A) {-80, -9, 9, 80}   B) {9, 80}

    C) $\{-4\sqrt{5}, -3, 3, 4\sqrt{5}\}$ D) $\{3, 4\sqrt{5}\}$

354) _____

    Answer: C

355) $(4x - 7)^2 + 6(4x - 7) + 8 = 0$

   A) $\left\{-\dfrac{9}{7}, \dfrac{11}{4}\right\}$ B) $\left\{\dfrac{5}{4}, -\dfrac{3}{4}\right\}$ C) $\left\{\dfrac{9}{4}, -\dfrac{11}{4}\right\}$ D) $\left\{\dfrac{5}{4}, \dfrac{3}{4}\right\}$

355) _____

Answer: D

356) $(5x - 1)^2 = 9(5x - 1) - 18$

   A) $\left\{\dfrac{4}{5}, \dfrac{7}{5}\right\}$ B) $\left\{\dfrac{2}{5}, 1\right\}$ C) $\left\{-\dfrac{4}{5}, -\dfrac{7}{5}\right\}$ D) $\{3, 6\}$

356) _____

Answer: A

357) $(x + 3)^4 - 5(x + 3)^2 + 4 = 0$

   A) $\{1, 4\}$ B) $\{-1, -4\}$ C) $\{-2, -1, 1, 2\}$ D) $\{-5, -4, -2, -1\}$

357) _____

Answer: D

358) $3x^{-2} + 18x^{-1} + 15 = 0$

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

358) _____

Answer: C

359) $12x^{-2} - 3x^{-1} = 54$

   A) $\left\{-\dfrac{9}{4}, -2\right\}$ B) $\left\{\dfrac{9}{4}, -2\right\}$ C) $\left\{\dfrac{4}{9}, -\dfrac{1}{2}\right\}$ D) $\left\{\dfrac{9}{4}, 2\right\}$

359) _____

Answer: C

360) $6x^{-2/5} + 13x^{-1/5} + 6 = 0$

   A) $\left\{-\dfrac{3}{2}, -\dfrac{2}{3}\right\}$ B) $\left\{\dfrac{243}{32}, \dfrac{32}{243}\right\}$ C) $\{2, 3\}$ D) $\left\{-\dfrac{243}{32}, -\dfrac{32}{243}\right\}$

360) _____

Answer: D

Solve for the indicated variable.

361) $\dfrac{1}{A} = \dfrac{1}{m} + \dfrac{1}{t}$,   for t

   A) $t = 1 + \dfrac{mA}{m - A}$ B) $t = \dfrac{mA}{m - A}$ C) $t = \dfrac{m - A}{mA}$ D) $t = 2 - \dfrac{mA}{m - A}$

361) _____

Answer: B

362) $\dfrac{1}{Q} = \dfrac{1}{T_1} + \dfrac{1}{T_2}$,   for T_2

   A) $T_2 = \dfrac{QT_1}{T_1 - Q}$ B) $T_2 = \dfrac{QT_1}{T_1 + 2Q}$ C) $T_2 = \dfrac{Q - T_1}{T_1 Q}$ D) $T_2 = \dfrac{T_1 - Q}{T_1 Q}$

362) _____

Answer: A

363) $\dfrac{1}{A} = \dfrac{1}{B} + \dfrac{1}{C}$, for A

    A) $A = 4 + B + C$ B) $A = \dfrac{B}{B + C}$ C) $A = \dfrac{B - C}{BC}$ D) $A = \dfrac{BC}{B + C}$

    Answer: D

363) _____

364) $Z = A(1 + x)^{1/3}$, for x

    A) $x = \left(\dfrac{Z}{A}\right)^3$ B) $x = \left(\dfrac{Z}{A}\right)^3 + 1$ C) $x = \left(\dfrac{A}{Z}\right)^3$ D) $x = \left(\dfrac{Z}{A}\right)^3 - 1$

    Answer: D

364) _____

365) $M = \pi r^2 h d$, for r

    A) $r = \pm\sqrt{\pi M h d}$ B) $r = \dfrac{\pm\sqrt{M\pi h d}}{\pi h d}$ C) $r = \dfrac{\pm\sqrt{\pi M h d}}{h d}$ D) $r = \dfrac{\pm M\sqrt{\pi h d}}{\pi h d}$

    Answer: B

365) _____

366) $A = 2\pi a^2$, for a

    A) $a = \dfrac{\pm A\sqrt{2\pi}}{2\pi}$ B) $a = \dfrac{\pm\sqrt{A\pi}}{2}$ C) $a = \dfrac{\pm\sqrt{2\pi A}}{2\pi}$ D) $a = \sqrt{2\pi A}$

    Answer: C

366) _____

367) $V = \dfrac{1}{m}\sqrt{2Vem}$, for m

    A) $m = \dfrac{2V^3}{e}$ B) $m = \dfrac{2V}{e}$ C) $m = \dfrac{2e}{V}$ D) $m = \dfrac{\pm\sqrt{2Ve}}{Ve}$

    Answer: C

367) _____

368) $Ve = \dfrac{1}{2}mv^2$, for v

    A) $v = \pm 2\dfrac{\sqrt{Ve}}{m}$ B) $v = \pm\sqrt{2Ve}$ C) $v = \pm\sqrt{\dfrac{Ve}{2m}}$ D) $v = \dfrac{\pm\sqrt{2mVe}}{m}$

    Answer: D

368) _____

Write the inequality in interval notation.

369) $x \ge -6$

    A) $(-\infty, -6]$ B) $[-6, \infty]$ C) $[-6, \infty)$ D) $(-6, \infty)$

    Answer: C

369) _____

370) $-5 \le x < 3$

    A) $(-5, 3]$ B) $[-5, 3]$ C) $(-5, 3)$ D) $[-5, 3)$

    Answer: D

370) _____

371) $-8 \le x$

    A) $[-8, \infty)$ B) $(-8, \infty)$ C) $(-\infty, -8]$ D) $[-8, \infty]$

    Answer: A

371) _____
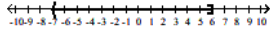
372) 6 > x ≥ 3

    A) [3, 6)   B) (3, 6)   C) (3, 6]   D) [3, 6]

    Answer: A

373) 6 < x ≤ 8

    A) [6, 8)   B) (6, 8]   C) [6, 8]   D) (6, 8)
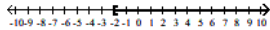
    Answer: B

374) –4 < x < –3

    A) [–4, –3]   B) [–4, –3)   C) (–4, –3)   D) (–4, –3]
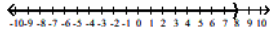
    Answer: C

375)

    A) (–5, 8]   B) [–6, 7)   C) [–7, 6)   D) (–7, 6]

    Answer: D
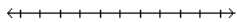
376)

    A) [3, ∞)   B) (–∞, –2]   C) [–2, ∞)   D) (–∞, 3]
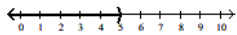
    Answer: C
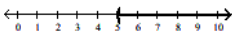
377)

    A) (–∞, ∞]   B) (–∞, 8)   C) (–∞, –9]   D) (8, ∞)
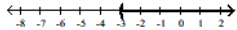
    Answer: B
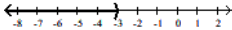
Solve and graph the inequality. Give answer in interval notation.

378) 13x – 4 > 12x + 1

    A) (–∞, 5)

    B) (5, ∞)

    C) (–3, ∞)

    D) (–∞, –3)

    Answer: B

379) –10x – 5 ≤ –11x – 14

   A) (–∞, –9]

   B) (–10, ∞)

   C) (–∞, –10)

   D) [–9, ∞)
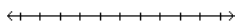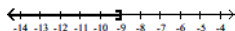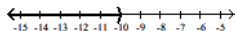
Answer: A

380) 12x + 11 ≥ 11x + 7

   A) (–∞, 12)

   B) [–4, ∞)

   C) (–∞, –4]

   D) (12, ∞)
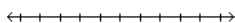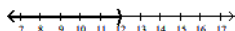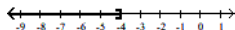
Answer: B

381) 2x + 1 ≥ 3x – 7

   A) (–∞, 8]

   B) (2, ∞)

   C) [–8, ∞)

   D) (–∞, 2]
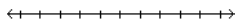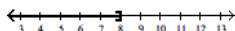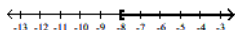
Answer: A

382) –10 + 8x + 12 ≥ 7x – 7

   A) (–∞, –9]

   B) (–∞, 8)

   C) [–9, ∞)

   D) (8, ∞)
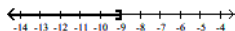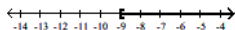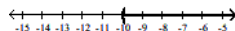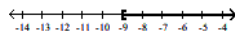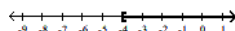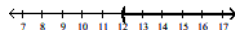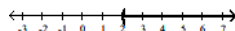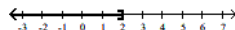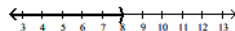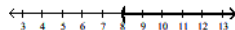
Answer: C

383) $15x - 20 > 5(2x + 2)$

383) _____
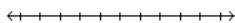
    A) $(6, \infty)$
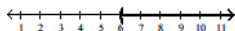
    B) $(-\infty, 6)$
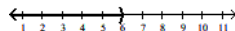
    C) $(15, \infty)$
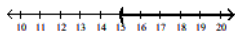
    D) $(-\infty, 15)$
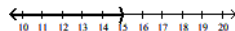
Answer: A

384) $-6(2x - 2) < -18x - 18$

384) _____
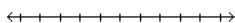
    A) $(-5, \infty)$
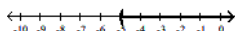
    B) $(-\infty, -18)$
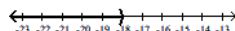
    C) $(-18, \infty)$
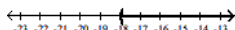
    D) $(-\infty, -5)$
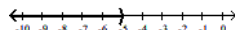
Answer: D

385) $\dfrac{9x - 7}{8} < \dfrac{79}{9}$

385) _____

    A) $\left(-\infty, \dfrac{79}{9}\right)$

$\dfrac{79}{9}$

    B) $\left(-\infty, \dfrac{695}{81}\right)$

$\dfrac{695}{81}$

    C) $\left(\dfrac{79}{9}, \infty\right)$

$\dfrac{79}{9}$

    D) $\left(\dfrac{695}{81}, \infty\right)$

$\dfrac{695}{81}$

Answer: B

45
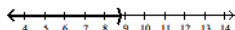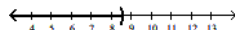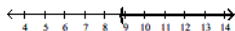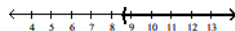
386) $\dfrac{x}{7} - \dfrac{1}{5} \leq \dfrac{x}{2} + 3$

386) ____
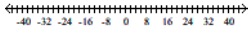
A) $\left[-\infty, -\dfrac{224}{25} \right]$
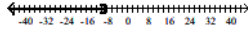
B) $\left[-\dfrac{224}{25}, \infty \right)$
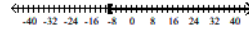
C) $\left(-\dfrac{224}{25}, \infty \right)$
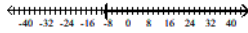
D) $\left(-\infty, -\dfrac{224}{25} \right]$

Answer: B

387) $\dfrac{x-2}{18} \geq \dfrac{x-5}{24} + \dfrac{1}{72}$

387) ____
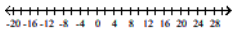
A) $(-6, \infty)$
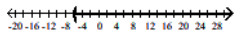
B) $(-\infty, -6)$
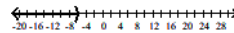
C) $[-6, \infty)$
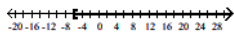
D) $(-\infty, -6]$
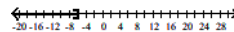
Answer: C

388) $-10 < -2x \leq -2$

388) ____
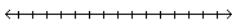
A) $[1, 5)$
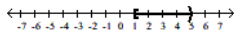
B) $[1, 5]$
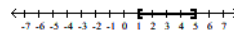
C) $(-5, -1]$
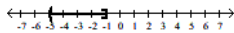
D) $[-5, -1)$
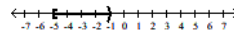
Answer: A

389) $-15 < 3x + 3 \le -3$
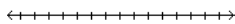
⟵+++++++++++++++⟶

A) $(-6, -2)$
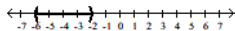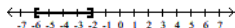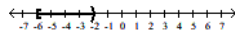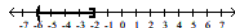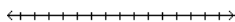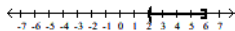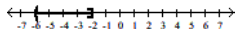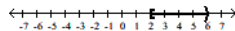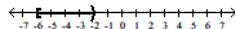
⟵++⟨++⟩+++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

B) $[-6, -2)$

⟵+■++⟩+++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

C) $[-6, -2]$

⟵+■++■+++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

D) $(-6, -2]$

⟵+⟨++■+++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

Answer: D

390) $9 < -3x + 3 \le 21$

⟵+++++++++++++++⟶

A) $(2, 6]$

⟵+++++++++⟨++■++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

B) $[2, 6)$

⟵+++++++++■++⟩++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

C) $(-6, -2]$

⟵+⟨++■+++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

D) $[-6, -2)$

⟵+■++⟩+++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

Answer: D

391) $-2 > 5x + 3 \ge -22$

⟵+++++++++++++++⟶

A) $(-5, -1]$

⟵++⟨++■++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

B) $[-5, -1]$

⟵++■++■++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

C) $(-5, -1)$

⟵++⟨++⟩++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

D) $[-5, -1)$

⟵++■++⟩++++++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

Answer: D

392) $-1 \le \dfrac{x + 1}{2} \le 3$

⟵+++++++++++++++⟶

A) $(-7, 1)$

⟵⟨+++++++++⟩+++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

B) $[-3, 5]$

⟵++++■++++++■++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

C) $[-5, 3]$

⟵++■++++++⟩++++⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

D) $[-1, 7]$

⟵++++++■++++++■⟶
-7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7

Answer: B

389) _____

390) _____

391) _____
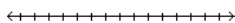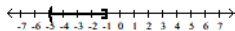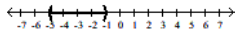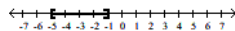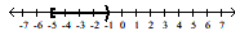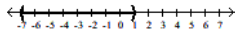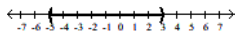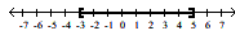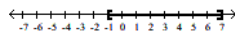
392) _____

393) $-1 \le \dfrac{x + 1}{-2} \le 3$

393) _____
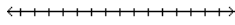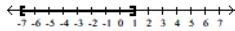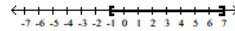

  A) [-7, 1]   B) (-3, 5)
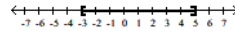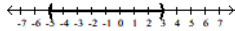
  C) [-5, 3]   D) (-1, 7)

  Answer: A

Solve the quadratic inequality. Write the solution set in interval notation.

394) $(x - 4)(x + 3) > 0$

394) _____

  A) $(-3, \infty)$ B) $(-\infty, -4) \cup (3, \infty)$ C) $(-3, 4)$ D) $(-\infty, -3) \cup (4, \infty)$

  Answer: D

395) $x^2 + 3x + 2 > 0$

395) _____

  A) $(-\infty, -2)$ B) $(-1, \infty)$

  C) $(-\infty, -2) \cup (-1, \infty)$ D) $(-2, -1)$

  Answer: C

396) $x^2 - 3x - 10 < 0$

396) _____

  A) $(5, \infty)$ B) $(-\infty, -2) \cup (5, \infty)$ C) $(-2, 5)$ D) $(-\infty, -2)$

  Answer: C

397) $x^2 - 3x - 18 \le 0$

397) _____

  A) $(-\infty, -3]$ B) $[6, \infty)$ C) $[-3, 6]$ D) $(-\infty, -3] \cup [6, \infty)$

  Answer: C

398) $x^2 + 8x + 12 \ge 0$

398) _____

  A) $[-6, -2]$ B) $[-2, \infty)$

  C) $(-\infty, -6]$ D) $(-\infty, -6] \cup [-2, \infty)$

  Answer: D

399) $x^2 - 3x \le -2$

399) _____

  A) $[-2, -1]$ B) $(-\infty, -2] \cup [-1, \infty)$

  C) $(-2, -1)$ D) $[1, 2]$

  Answer: D

400) $(5 - 4x)^2 \ge -25$

400) _____

  A) $\varnothing$ B) $\left(-\infty, \dfrac{5}{2}\right] \cup (0, \infty)$ C) $(-\infty, \infty)$ D) $\left[\dfrac{5}{2}, 0\right]$

  Answer: C

401) $(7 + 3x)^2 \le -25$

    A) $\varnothing$

    B) $\left[-4, -\dfrac{2}{3}\right]$

    C) $(-\infty, \infty)$

    D) $\left(-\infty, -4\right) \cup \left(-\dfrac{2}{3}, \infty\right)$

    Answer: A

401) _____

402) $x^2 + 18x + 76 \ge 0$

    A) $[-9 - \sqrt{5}, -9 + \sqrt{5}]$

    B) $(-\infty, -9 - \sqrt{5}] \cup [-9 + \sqrt{5}, \infty)$

    C) $(-\infty, -9 - \sqrt{5}) \cup (-9 + \sqrt{5}, \infty)$

    D) $(-\infty, -\sqrt{5}] \cup [\sqrt{5}, \infty)$

    Answer: B

402) _____

403) $-3x^2 + 3x - 5 \le 0$

    A) $\left[\dfrac{1}{3}, 5\right]$

    B) $\left[-3, -\dfrac{1}{5}\right]$

    C) $\varnothing$

    D) $(-\infty, \infty)$

    Answer: D

403) _____

Solve the inequality. Write the solution set in interval notation.

404) $(x + 4)(x + 1)(x - 2) > 0$

    A) $(-\infty, -4) \cup (-1, 2)$

    B) $(2, \infty)$

    C) $(-4, -1) \cup (2, \infty)$

    D) $(-\infty, -1)$

    Answer: C

404) _____

405) $(x + 9)(x + 5)(x - 10) < 0$

    A) $(-\infty, -9) \cup (-5, 10)$

    B) $(-9, -5) \cup (10, \infty)$

    C) $(10, \infty)$

    D) $(-\infty, -5)$

    Answer: A

405) _____

406) $(x + 4)(x + 2)(x - 5) > 0$

    A) $(5, \infty)$

    B) $(-4, -2) \cup (5, \infty)$

    C) $(-\infty, -2)$

    D) $(-\infty, -4) \cup (-2, 5)$

    Answer: B

406) _____

407) $(x + 10)(x - 8)(x + 3) > 0$

    A) $(-\infty, -10) \cup (3, 8)$ B) $(-10, -3) \cup (8, \infty)$ C) $(-10, -8) \cup (3, \infty)$ D) $(-\infty, 8) \cup (3, 10)$

    Answer: B

407) _____

408) $(x - 7)(x - 9)(x + 3) < 0$

    A) $(-7, -3) \cup (9, \infty)$ B) $(-9, -7) \cup (3, \infty)$ C) $(-\infty, -3) \cup (7, 9)$ D) $(-\infty, -7) \cup (3, 9)$

    Answer: C

408) _____

409) $x^2(x + 64)^2 \ge 0$

    A) $\varnothing$ B) $(-\infty, \infty)$ C) $[-8, 0] \cup [8, \infty)$ D) $(-\infty, -8] \cup [0, 8]$

    Answer: B

409) _____

410) $x^2(x + 49)^2 < 0$

    A) $\varnothing$ B) $[-7, 0] \cup [7, \infty)$ C) $(-\infty, -7] \cup [0, 7]$ D) $(-\infty, \infty)$

    Answer: A

410) _____

411) $x^3 - 8x^2 > 0$ 411) _____

    A) $(0, 8)$ B) $(8, \infty)$ C) $(-\infty, 0) \cup (8, \infty)$ D) $(-\infty, 8)$

    Answer: B

412) $x^3 + 4x^2 - 4x - 16 \geq 0$ 412) _____

    A) $[-4, 2]$ B) $[-4, -2] \cup [2, \infty)$ C) $[-4, \infty)$ D) $[-2, 2] \cup [4, \infty)$

    Answer: B

413) $x^3 + 3x^2 - 9x \leq 27$ 413) _____

    A) $[3, \infty)$ B) $[-3, 3]$ C) $(-\infty, -3] \cup [3, \infty)$ D) $(-\infty, 3]$

    Answer: D

Solve the rational inequality. Write the solution set in interval notation.

414) $\dfrac{1}{x + 20} > 0$ 414) _____

    A) $[20, \infty]$ B) $(-20, \infty)$ C) $(-\infty, 20)$ D) $(20, -\infty)$

    Answer: B

415) $\dfrac{-3}{-7x - 5} > 0$ 415) _____

    A) $\left(-\infty, \dfrac{5}{7}\right)$ B) $(0, \infty)$ C) $\left(-\dfrac{5}{7}, \infty\right)$ D) $\left(-\infty, -\dfrac{7}{5}\right)$

    Answer: C

416) $\dfrac{x - 7}{x + 8} \leq 0$ 416) _____

    A) $(-7, 8]$ B) $[-7, 8]$ C) $(-8, 7]$ D) $[-8, 7]$

    Answer: C

417) $\dfrac{4x}{-3x + 7} \geq 11$ 417) _____

    A) $\left(-\infty, \dfrac{77}{37}\right] \cup \left[\dfrac{77}{37}, \infty\right)$ B) $\left(-\infty, 0\right] \cup \left(\dfrac{7}{3}, \infty\right)$

    C) $\left[0, \dfrac{7}{3}\right)$ D) $\left[\dfrac{77}{37}, \dfrac{7}{3}\right)$

    Answer: D

418) $\dfrac{x + 9}{x + 8} < 6$ 418) _____

    A) $\varnothing$ B) $(-\infty, -8) \cup \left(-\dfrac{39}{5}, \infty\right)$

    C) $\left(-8, -\dfrac{39}{5}\right)$ D) $\left(-\infty, -\dfrac{39}{5}\right) \cup (8, \infty)$

    Answer: B

419) $8 \geq \dfrac{1}{x}$

    A) $\left[0, \dfrac{1}{8}\right)$ B) $(-\infty, 0) \cup [8, \infty)$ C) $(0, 8]$ D) $(-\infty, 0) \cup \left[\dfrac{1}{8}, \infty\right)$

    Answer: D

419) _____

420) $\dfrac{2x + 7}{x - 2} \leq 0$

    A) $\left[-\dfrac{7}{2}, 2\right)$ B) $\left[-\dfrac{7}{2}, 2\right]$

    C) $\left(-\infty, -\dfrac{7}{2}\right] \cup (2, \infty)$ D) $\left(-\infty, -\dfrac{7}{2}\right] \cup [2, \infty)$

    Answer: A

420) _____

421) $\dfrac{(x - 3)(x + 7)}{x - 4} \leq 0$

    A) $(-\infty, -7) \cup (3, 4)$ B) $[-7, 3] \cup (4, \infty)$ C) $[3, 4)$ D) $(-\infty, -7] \cup [3, 4)$

    Answer: D

421) _____

422) $\dfrac{-4x + 6}{2x^2 + 2} > 0$

    A) $\left(-\infty, -\dfrac{2}{3}\right)$ B) $\left(-\infty, \dfrac{3}{2}\right)$ C) $(-\infty, 0)$ D) $\left(-\dfrac{3}{2}, \infty\right)$

    Answer: B

422) _____

423) $\dfrac{2}{(x + 7)^2} < 0$

    A) $(-\infty, \infty)$ B) $(-\infty, -7)$ C) $\varnothing$ D) $(-7, 0)$

    Answer: C

423) _____

Solve the problem.

424) The profit made when t units are sold, t > 0, is given by $P = t^2 - 30t + 200$. Determine the number of units to be sold in order for P = 0 (the break- even point).
    A) t = -10 or t = -20   B) t = 30
    C) t > 10   D) t = 10 or t = 20

    Answer: D

424) _____

425) The profit made when t units are sold, t > 0, is given by $P = t^2 - 30t + 216$. Determine the number of units to be sold in order for P > 0 (a profit is made).
    A) t > 18 or t < 12   B) 18 < t < 12   C) t = 30   D) t = 18 or t = 12

    Answer: A

425) _____

426) The profit made when t units are sold, t > 0, is given by $P = t^2 - 33t + 270$. Determine the number of units to be sold in order for P < 0 (a loss is taken).
    A) t > 0   B) t < 15 or t > 18   C) t = 15 or t = 18   D) 15 < t < 18

    Answer: D

426) _____

427) The cost of producing t units is $C = 2t^2 + 7t$, and the revenue generated from sales is $R = 3t^2 + t$.   427) _____
Determine the number of units to be sold in order to generate a profit.
    A) $t > 0$ B) $t > 6$ C) $t > 8$ D) $t > 7$

Answer: B

428) A rectangular enclosure must have an area of at least 800 yd². If 180 yd of fencing is to be used, and   428) _____
the width cannot exceed the length, within what limits must the width of the enclosure lie?
    A) $10 \le w \le 80$ B) $0 \le w \le 10$ C) $45 \le w \le 80$ D) $10 \le w \le 45$

Answer: D

429) A coin is tossed upward from a balcony 320 ft high with an initial velocity of 32 ft/sec. During what   429) _____
interval of time will the coin be at a height of at least 80 ft? ($h = -16t^2 + v_0t + h_0$.)
    A) $0 \le t \le 1$ B) $4 \le t \le 5$ C) $5 \le t \le 10$ D) $0 \le t \le 5$

Answer: D

430) A retailer knows that n games can be sold in a month if the price is 20 - 0.3n dollars per game. If he   430) _____
buys each game for $2, and if he wishes to make a profit of at least $240 per month on sales of this
game, how many games must he sell each month?
    A) $20 \le n \le 40$ B) $20 \le n \le 60$ C) $20 \le n \le 20$ D) $20 \le n \le 30$

Answer: A

431) If a rocket is propelled upward from ground level, its height in meters after t seconds is given by   431) _____
$h = -9.8t^2 + 78.4t$. During what interval of time will the rocket be higher than 147 m?
    A) $3 < t < 5$ B) $6 < t < 8$ C) $0 < t < 3$ D) $5 < t < 6$

Answer: A

432) A flare fired from the bottom of a gorge is visible only when the flare is above the rim. If it is fired   432) _____
with an initial velocity of 208 ft/sec, and the gorge is 672 ft deep, during what interval can the flare
be seen? ($h = -16t^2 + v_0t + h_0$.)
    A) $6 < t < 7$ B) $0 < t < 6$ C) $12 < t < 13$ D) $18 < t < 19$
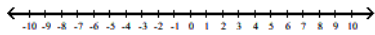
Answer: A

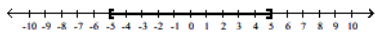Graph the solution set.
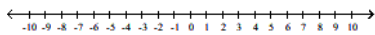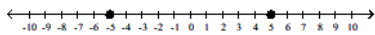
433) |x| = 3
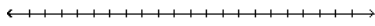
433) _____
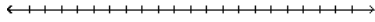
A)
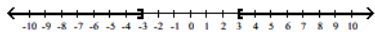
B)
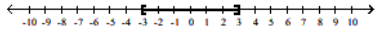
C)
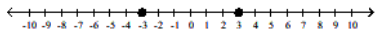
D)
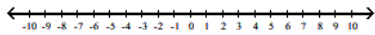
Answer: C

434) |x| = -5

434) _____

A)

B)

C)

D)

Answer: C

435) $|x| > 8$
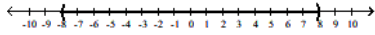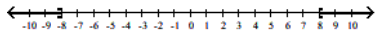
A)

B)

C)

D)
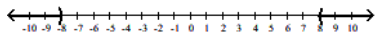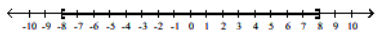
Answer: A

436) $|x| \geq 2$
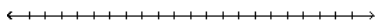
A)

B)

C)

D)
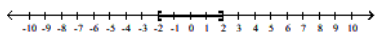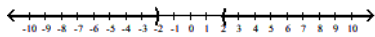
Answer: C

437) $|x| > -2$
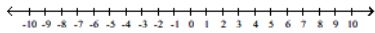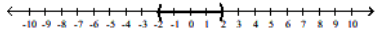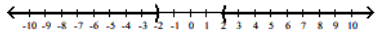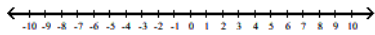
A)

B)

C)

D)

Answer: D

438) $|x| \neq 5$

A)

B)

C)
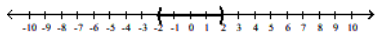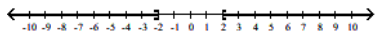

D)

Answer: A

437) _____

438) _____
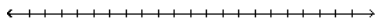
439) $|x| < 9$

439) _____

A)

B)

C)

D)

Answer: D

440) $|x| \leq 9$

440) _____

A)

B)

C)

D)
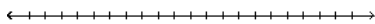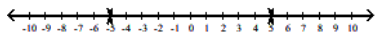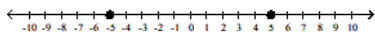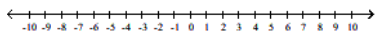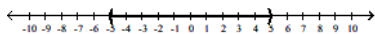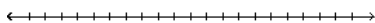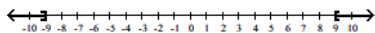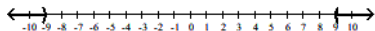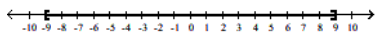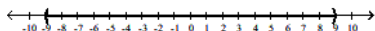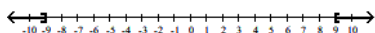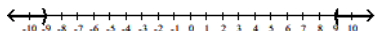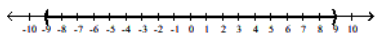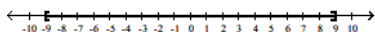
Answer: D

Solve the equation.

441) $|6x + 6| = 5$

441) _____

A) $\left\{\dfrac{11}{6}, \dfrac{1}{6}\right\}$ B) $\left\{-\dfrac{11}{6}, \dfrac{1}{6}\right\}$ C) $\left\{-\dfrac{1}{6}\right\}$ D) $\left\{-\dfrac{1}{6}, -\dfrac{11}{6}\right\}$

Answer: D

442) $|9x - 2| = 3$

442) _____

A) $\left\{\dfrac{1}{9}, -\dfrac{5}{9}\right\}$ B) $\left\{\dfrac{5}{9}\right\}$ C) $\left\{-\dfrac{1}{9}, -\dfrac{5}{9}\right\}$ D) $\left\{\dfrac{5}{9}, -\dfrac{1}{9}\right\}$

Answer: D

443) $|-9x + 6| = 5$

A) $\left\{\dfrac{1}{9}, \dfrac{11}{9}\right\}$ B) $\left\{\dfrac{1}{9}\right\}$ C) $\left\{\dfrac{11}{9}, -\dfrac{1}{9}\right\}$ D) $\left\{-\dfrac{11}{9}, -\dfrac{1}{9}\right\}$

443) _____

Answer: A

444) $|-5x + 7| = 4$

A) $\left\{-\dfrac{3}{5}, \dfrac{3}{5}\right\}$ B) $\left\{-\dfrac{11}{5}, -\dfrac{3}{5}\right\}$ C) $\left\{\dfrac{3}{5}\right\}$ D) $\left\{\dfrac{3}{5}, \dfrac{11}{5}\right\}$

444) _____

Answer: D

445) $|3 - 2x| = 4$

A) $\left\{-\dfrac{1}{2}, \dfrac{7}{2}\right\}$ B) $\left\{-\dfrac{1}{2}\right\}$ C) $\left\{\dfrac{1}{2}, -\dfrac{1}{2}\right\}$ D) $\left\{-\dfrac{7}{2}, \dfrac{1}{2}\right\}$

445) _____

Answer: A

446) $\left|\dfrac{7}{x - 9}\right| = 9$

A) $\left\{\dfrac{88}{9}, \dfrac{74}{9}\right\}$ B) $\left\{-\dfrac{74}{9}, -\dfrac{88}{9}\right\}$ C) $\{9\}$ D) $\left\{-\dfrac{88}{9}, -\dfrac{74}{9}\right\}$

446) _____

Answer: A

447) $\left|\dfrac{7x - 3}{6}\right| = 6$

A) $\left\{\dfrac{9}{4}, -\dfrac{3}{4}\right\}$ B) $\left\{\dfrac{33}{4}, -\dfrac{39}{4}\right\}$ C) $\left\{\dfrac{39}{7}\right\}$ D) $\left\{\dfrac{39}{7}, -\dfrac{33}{7}\right\}$

447) _____

Answer: D

448) $\left|\dfrac{7x + 2}{4x + 9}\right| = 7$

A) $\left\{-\dfrac{61}{21}, -\dfrac{13}{7}\right\}$ B) $\left\{-\dfrac{65}{21}, -\dfrac{61}{35}\right\}$ C) $\left\{\dfrac{5}{7}, -\dfrac{9}{7}\right\}$ D) $\left\{\dfrac{61}{35}, \dfrac{3}{7}\right\}$

448) _____

Answer: A

449) $|7x + 6| = |6x + 3|$

A) $\left\{-\dfrac{3}{13}, -9\right\}$ B) $\left\{-3, -\dfrac{9}{13}\right\}$ C) $\{-9, 1\}$ D) $\{9, 1\}$

449) _____

Answer: B

450) $|7x - 8| = |2x - 9|$

A) $\left\{-\dfrac{17}{5}, 1\right\}$ B) $\left\{-\dfrac{1}{5}, \dfrac{17}{9}\right\}$ C) $\left\{-\dfrac{1}{9}, \dfrac{17}{5}\right\}$ D) $\left\{\dfrac{17}{5}, 1\right\}$

450) _____

Answer: B

451) $|7x + 4| = |1 - 4x|$

A) $\left\{-\dfrac{5}{11}, 1\right\}$ B) $\left\{-\dfrac{3}{11}, -\dfrac{5}{3}\right\}$ C) $\left\{-1, -\dfrac{5}{11}\right\}$ D) $\left\{\dfrac{5}{11}, 1\right\}$

451) _____

Answer: B

452) $|-2 + 5x| = |7 - 10x|$

A) $\left\{-\dfrac{9}{5}, -\dfrac{1}{3}\right\}$ B) $\left\{\dfrac{3}{5}, 1\right\}$ C) $\left\{-\dfrac{1}{3}, 1\right\}$ D) $\left\{\dfrac{1}{3}, 1\right\}$

Answer: B

452) ____

453) $|5x - 9| = |x - 1|$

A) $\varnothing$ B) $\{2\}$ C) $\left\{-2, -\dfrac{5}{3}\right\}$ D) $\left\{2, \dfrac{5}{3}\right\}$

Answer: D

453) ____

454) $|3x + 7| = |x + 5|$

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

Answer: B

454) ____

455) $|7x - 4| = |x - 6|$

A) $\left\{\dfrac{1}{3}, -\dfrac{5}{3}\right\}$ B) $\left\{-\dfrac{1}{3}, -\dfrac{1}{3}\right\}$ C) $\varnothing$ D) $\left\{-\dfrac{1}{3}, \dfrac{5}{4}\right\}$

Answer: D

455) ____

456) $|x - 7| + 3 = 6$

A) $\{10, 4\}$ B) $\{10\}$ C) $\{-10, -4\}$ D) $\varnothing$

Answer: A

456) ____

457) $|6x + 8| + 6 = 15$

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

Answer: A

457) ____

458) $|2x + 3| + 9 = 13$

A) $\left\{\dfrac{1}{3}, -\dfrac{7}{3}\right\}$ B) $\left\{\dfrac{1}{2}, -\dfrac{7}{2}\right\}$ C) $\left\{-\dfrac{1}{2}, \dfrac{7}{2}\right\}$ D) $\varnothing$

Answer: B

458) ____

459) $|x - 5| = 0$

A) $\{5\}$ B) $(-5, \infty)$ C) $(-\infty, 5)$ D) $\{-5, 5\}$

Answer: A

459) ____

460) $|5x - 7| = -9$

A) $\varnothing$ B) $\left\{\dfrac{16}{5}, \dfrac{2}{5}\right\}$ C) $\left\{-\dfrac{9}{5}, -\dfrac{2}{5}\right\}$ D) $\left\{-\dfrac{2}{5}\right\}$

Answer: A

460) ____

461) $|8x - 3| + 6 = -3$

A) $\varnothing$ B) $\left\{-\dfrac{3}{2}, -\dfrac{3}{4}\right\}$ C) $\left\{-\dfrac{3}{4}\right\}$ D) $\left\{\dfrac{3}{2}, \dfrac{3}{4}\right\}$

Answer: A

461) ____

462) $\left|x^2 + 6x - 27\right| = 0$ 462) _____

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

Answer: A

463) $\left|9x^3 + 3x^2 - 6x\right| = 0$ 463) _____

    A) $\left\{\dfrac{3}{2}, 1, 0\right\}$ B) $\left\{\dfrac{3}{2}, 0\right\}$ C) $\left\{\dfrac{2}{3}, -1, 0\right\}$ D) $\left\{\dfrac{3}{2}, -1\right\}$

Answer: C

464) $\left|x^2 + 9\right| = |6x|$ 464) _____

    A) {-3}   B) {-3, 3}   C) {3}   D) $\varnothing$

Answer: B

Solve the inequality. Write the solution set in interval notation.

465) $|3 - 7x| > 4$ 465) _____

    A) $\left(-\infty, -\dfrac{1}{7}\right) \cup \left(-\dfrac{9}{7}, \infty\right)$ B) $\left(-\infty, -\dfrac{1}{7}\right) \cup (1, \infty)$

    C) $\left(\dfrac{1}{7}, -1\right)$ D) $\left(-1, -\dfrac{1}{7}\right)$

Answer: B

466) $|7 + 7x| > 8$ 466) _____

    A) $\left(-\dfrac{15}{7}, \dfrac{1}{7}\right)$ B) $\left(-\infty, -\dfrac{15}{7}\right) \cup \left(\dfrac{1}{7}, \infty\right)$

    C) $\left(\dfrac{1}{7}, \dfrac{15}{7}\right)$ D) $\left(-\infty, \dfrac{1}{7}\right) \cup \left(\dfrac{17}{7}, \infty\right)$

Answer: B

467) $|x + 1| > 3$ 467) _____

    A) (-4, 2)   B) (2, ∞)   C) $\varnothing$ D) (-∞, -4) $\cup$ (2, ∞)

Answer: D

468) $|2 - 3x| \geq 11$ 468) _____

    A) $(-\infty, -3] \cup \left[\dfrac{13}{3}, \infty\right)$ B) $\left[-\dfrac{13}{3}, 3\right]$

    C) $(-\infty, 3] \cup \left[\dfrac{13}{3}, \infty\right)$ D) $\left[-3, \dfrac{13}{3}\right]$

Answer: A

469) $|9 - x| \geq 1$ 469) _____

    A) [8, 10]   B) (-∞, 8] $\cup$ [10, ∞)   C) [10, ∞)   D) [8, ∞)

Answer: B

470) $\left|\dfrac{5}{8} - \dfrac{1}{9}x\right| > \dfrac{2}{11}$

    A) $\left(-\infty, -\dfrac{639}{88}\right] \cup \left[\dfrac{351}{88}, \infty\right)$ B) $(-\infty, \infty)$

    C) $\left[\dfrac{351}{88}, \dfrac{639}{88}\right]$ D) $\left(-\infty, \dfrac{351}{88}\right) \cup \left(\dfrac{639}{88}, \infty\right)$

470) _____

Answer: D

471) $|x + 1| < 2$

    A) $(-3, -1)$ B) $(-3, 1)$ C) $\emptyset$ D) $(-\infty, -3) \cup (1, \infty)$

471) _____

Answer: B

472) $|2x + 2| < 16$

    A) $(-9, 7)$ B) $(-\infty, 2)$ C) $(-\infty, -9) \cup (7, \infty)$ D) $(-\infty, -9)$

472) _____

Answer: A

473) $|-5x + 1| < 4$

    A) $\left(-\dfrac{3}{5}, 1\right)$ B) $\left(-\infty, -\dfrac{7}{5}\right) \cup \left(\dfrac{1}{5}, \infty\right)$

    C) $\left(-\dfrac{3}{5}, -1\right)$ D) $\left(-\infty, -\dfrac{3}{5}\right) \cup (1, \infty)$

473) _____

Answer: A

474) $|2 - 3x| \leq 11$

    A) $\left[-\dfrac{13}{3}, 3\right]$ B) $(-\infty, -3] \cup \left[\dfrac{13}{3}, \infty\right)$

    C) $\left[-3, \dfrac{13}{3}\right]$ D) $(-\infty, 3] \cup \left[\dfrac{13}{3}, \infty\right)$

474) _____

Answer: C

475) $|7 - x| \leq 5$

    A) $[2, \infty)$ B) $(-\infty, 2] \cup [12, \infty)$ C) $[2, 12]$ D) $[12, \infty)$

475) _____

Answer: C

476) $\left|\dfrac{5}{8} - \dfrac{1}{9}x\right| < \dfrac{2}{11}$

    A) $\left(-\infty, -\dfrac{639}{88}\right] \cup \left[\dfrac{351}{88}, \infty\right)$ B) $\left(\dfrac{351}{88}, \dfrac{639}{88}\right)$

    C) $(-\infty, \infty)$ D) $\left(-\infty, \dfrac{351}{88}\right) \cup \left(\dfrac{639}{88}, \infty\right)$

476) _____

Answer: B

477) $|8x + 1| - 2 < 0$

    A) $\left(-\infty, -\dfrac{3}{8}\right) \cup \left(\dfrac{1}{8}, \infty\right)$ B) $\left(-\infty, -\dfrac{3}{8}\right)$

    C) $\emptyset$ D) $\left(-\dfrac{3}{8}, \dfrac{1}{8}\right)$

477) _____

Answer: D

60

478) $|4x + 5| + 4 < 6$

A) $\left(-\infty, -\dfrac{7}{4}\right) \cup \left(-\dfrac{3}{4}, \infty\right)$ 　　　　　 B) $\varnothing$

C) $\left(-\infty, -\dfrac{7}{4}\right)$ 　　　　　 D) $\left(-\dfrac{7}{4}, -\dfrac{3}{4}\right)$

478) _____

Answer: D

479) $|2x - 5| - 1 \geq 6$

A) $[-1, 6]$ 　　　 B) $\varnothing$ 　　　 C) $[6, \infty]$ 　　　 D) $(\infty, -1] \cup [6, \infty)$

479) _____

Answer: D

480) $|x - 7| + 1 > 6$

A) $(-\infty, 2) \cup (14, \infty)$ 　　　　　 B) $(2, 12)$

C) $(-\infty, -14) \cup (-2, \infty)$ 　　　　　 D) $(-\infty, 2) \cup (12, \infty)$

480) _____

Answer: D

481) $2 + \left|1 - \dfrac{1}{2}x\right| \geq 5$

A) $(-\infty, -4] \cup [8, \infty)$ 　　 B) $[-8, 4]$ 　　 C) $[-4, 8]$ 　　 D) $(-\infty, -8] \cup [4, \infty)$

481) _____

Answer: A

482) $|x + 8| \geq 0$

A) $(-\infty, \infty)$ 　　　　　 B) $[-8, 8]$

C) $\varnothing$ 　　　　　 D) $(-\infty, -8) \cup (-8, \infty)$

482) _____

Answer: A

483) $|6x - 7| > -4$

A) $\left(-\infty, -\dfrac{1}{6}\right) \cup \left(-\dfrac{3}{2}, \infty\right)$ 　　　　　 B) $\left(-\infty, \dfrac{11}{6}\right) \cup \left(\dfrac{1}{2}, \infty\right)$

C) $\varnothing$ 　　　　　 D) $(-\infty, \infty)$

483) _____

Answer: D

484) $|-5x - 3| > -5$

A) $\left(-\infty, \dfrac{2}{5}\right)$ 　　 B) $\varnothing$ 　　 C) $\left(-\dfrac{8}{5}, \dfrac{2}{5}\right)$ 　　 D) $(-\infty, \infty)$

484) _____

Answer: D

485) $|-9x + 5| \geq -9$

A) $(-\infty, \infty)$ 　　 B) $\left(-\infty, \dfrac{14}{9}\right)$ 　　 C) $\left(-\dfrac{4}{9}, \dfrac{14}{9}\right)$ 　　 D) $\varnothing$

485) _____

Answer: A

486) $|x - 1| \leq 0$

A) $\{-1\}$ 　　 B) $\{1\}$ 　　 C) $(-\infty, 1)$ 　　 D) $\varnothing$

486) _____

Answer: B

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487) $|x + 5| < 0$

    A) {5}   B) {-5}   C) ∅   D) $(-\infty, -5)$

    Answer: C

487) _____

488) $|2x - 9| \leq -2$

    A) $\left(-\infty, \frac{11}{2}\right] \cup \left(\frac{7}{2}, \infty\right)$ B) $\left(\frac{11}{2}, \frac{7}{2}\right)$

    C) $\left(-\infty, -\frac{5}{2}\right] \cup \left(-\frac{9}{2}, \infty\right)$ D) ∅

    Answer: D

488) _____

489) $\left|x^4 + 6x^2 + 9\right| < 0$

    A) $(-\infty, \infty)$ B) $(-3, 3)$ C) $(-\infty, -3) \cup (3, \infty)$ D) ∅

    Answer: D

489) _____

490) $\left|x^4 + 6x^2 + 9\right| > 0$

    A) ∅   B) $(-3, 3)$ C) $(-\infty, -3) \cup (3, \infty)$ D) $(-\infty, \infty)$

    Answer: D

490) _____

491) $\left|\frac{4x + 1}{x - 7}\right| \geq 0$

    A) $(-7, 7)$ B) $(-\infty, 7) \cup (7, \infty)$

    C) $\left(-\infty, -\frac{1}{4}\right] \cup (7, \infty)$ D) $\left(-\frac{1}{4}, 7\right)$

    Answer: B

491) _____

Write the statement as an absolute value inequality.

492) x is within 3 units of 2

    A) $|x - 3| < 2$ B) $|x - 2| < 3$ C) $|3 - x| < 2$ D) $|x - 2| \leq 3$

    Answer: D

492) _____

493) z is no less than 7 units from 12

    A) $|z - 12| \leq 7$ B) $|z - 7| > 12$ C) $|z - 12| \geq 7$ D) $|z - 12| > 7$

    Answer: C

493) _____

494) m is no more than 9 units from 8

    A) $|m - 8| \leq 9$ B) $|m - 8| < 9$ C) $|m - 9| < 8$ D) $|m - 8| > 9$

    Answer: A

494) _____

495) p is 2 units from 6

    A) $|p - 6| = 2$ B) $|p - 6| < 2$ C) $|p| = 4$ D) $|p - 2| = 6$

    Answer: A

495) _____

Solve the problem.

496) The temperatures in a freeze-dry process in degrees Celsius roughly satisfy the inequality $|C + 99|$ ≤64. What range of temperatures corresponds to this inequality?   496) _____
    A) [-35°C, 163°C]   B) [-163°C, -35°C]
    C) [-35°C, 35°C]   D) [-163°C, 163°C]

Answer: B

497) In a milling operation, the thickness of the wood panels that can be produced satisfies the inequality $|x - 1.88| ≤ 1.20$. What range of thicknesses corresponds to this inequality?   497) _____
    A) [0.68, 3.08]   B) [0.68, 6.16]   C) [0.34, 3.08]   D) [1.20, 1.88]

Answer: A

498) The average annual growth rate of Palmetto palms in inches satisfies the inequality $|x - 4.72| ≤ 3.59$. What range of growth corresponds to this inequality?   498) _____
    A) [1.13, 8.31]   B) [1.13, 16.62]   C) [0.57, 8.31]   D) [3.59, 4.72]

Answer: A

499) The number of non-text books read by college students ranges from 8 to 46. Using B as the variable, write an absolute value inequality that corresponds to this range.   499) _____
    A) $|B - 27| ≤ 19$ B) $|B - 8| ≤ 38$ C) $|B - 19| ≤ 27$ D) $|B - 38| ≤ 8$

Answer: A

500) The high temperature on December 12 in Biloxi, MS ranges from 31°F to 89°F. Using F as the variable, write an absolute value inequality that corresponds to this range.   500) _____
    A) $|F - 29| ≤ 60$ B) $|F - 60| ≤ 29$ C) $|F - 31| ≤ 58$ D) $|F - 58| ≤ 31$

Answer: B

501) A real estate development consists of home sites that range in width from 53 to 105 feet and in depth from 125 to 187 feet. Using x as the variable in both cases, write absolute value inequalities that correspond to these ranges.   501) _____
    A) $|x - 79| ≤ 26, |x - 156| ≤ 31$ B) $|B - 52| ≤ 53, |x - 62| ≤ 125$
    C) $|B - 53| ≤ 52, |x - 125| ≤ 62$ D) $|x - 26| ≤ 79, |x - 31| ≤ 156$

Answer: A