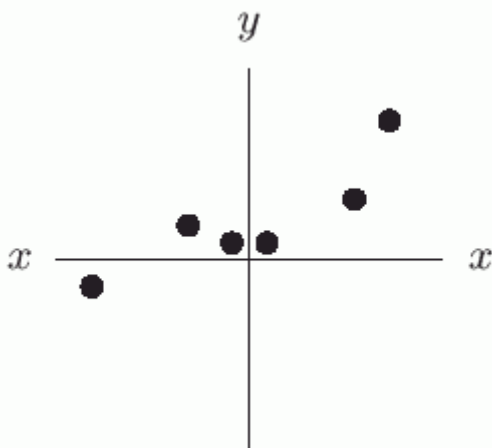


1. Does the following graph give y as a function of x ?



Ans: yes

Learning Objective: Decide whether a given relation is a function. Decide whether a given relation is a function. Decide whether a given relation is a function.; Recognize when a relationship between two quantities determines a function and use and interpret function notation. difficulty: easy

2. Use the following table to find $p(20)$. If there is more than one answer, enter the smallest first and separate them by semicolons.

x	0	10	20	30	40
$p(x)$	0	20	30	40	20

Ans: 30

Learning Objective: Use and interpret function notation. difficulty: easy

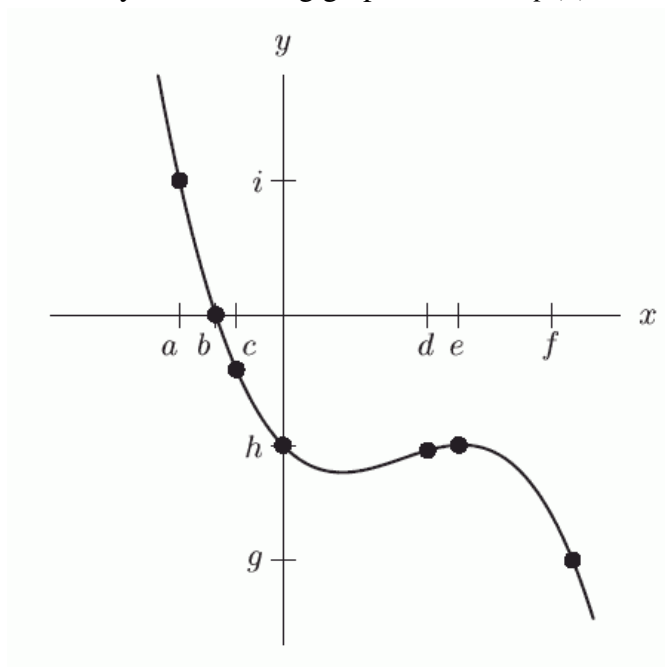
3. Use the following table to find a such that $p(a) = 4$. If there is more than one answer, enter the smallest first and separate them by semicolons.

x	0	1	2	3	4
$p(x)$	0	2	3	4	2

Ans: 3

Learning Objective: Use and interpret function notation. difficulty: easy

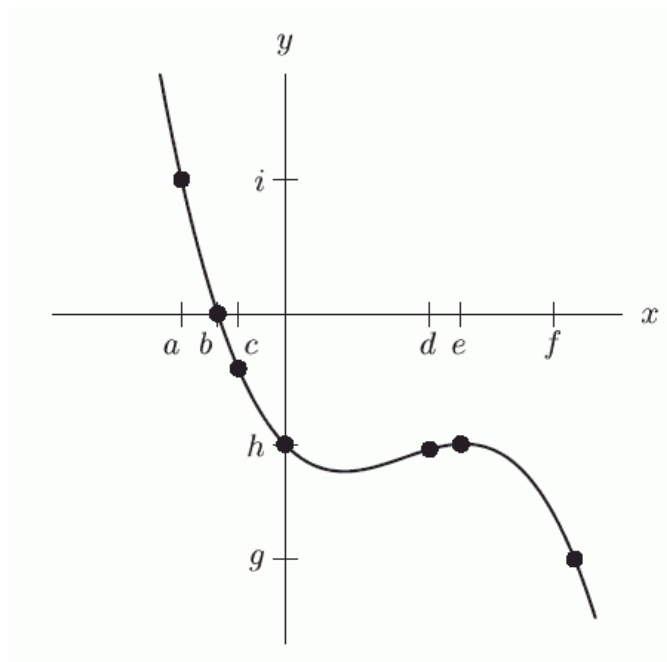
4. Let $y = p(x)$ be defined by the following graph. What is $p(0)$?



Ans: h

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas.; Use and interpret function notation. difficulty: easy

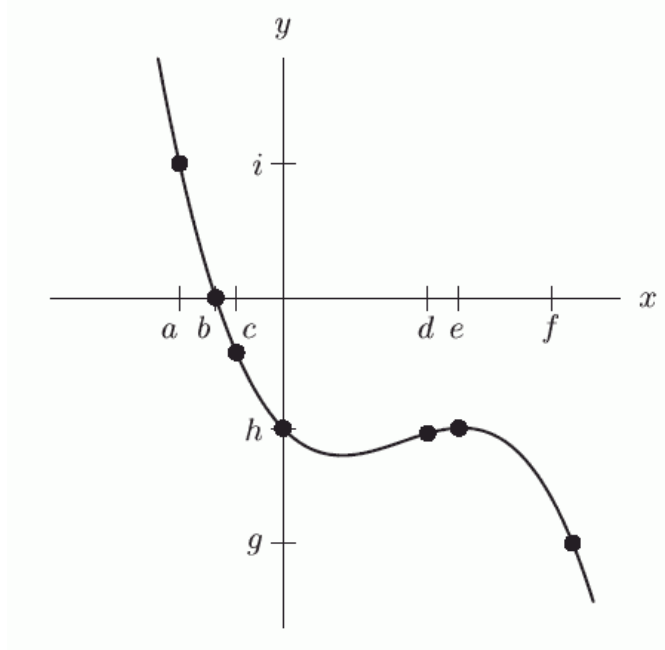
5. Let $y = p(x)$ be defined by the following graph. If $p(x) = g$, what is x ? If there is more than one answer, enter the smallest first and separate them by semicolons.



Ans: f

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas.; Use and interpret function notation. difficulty: easy

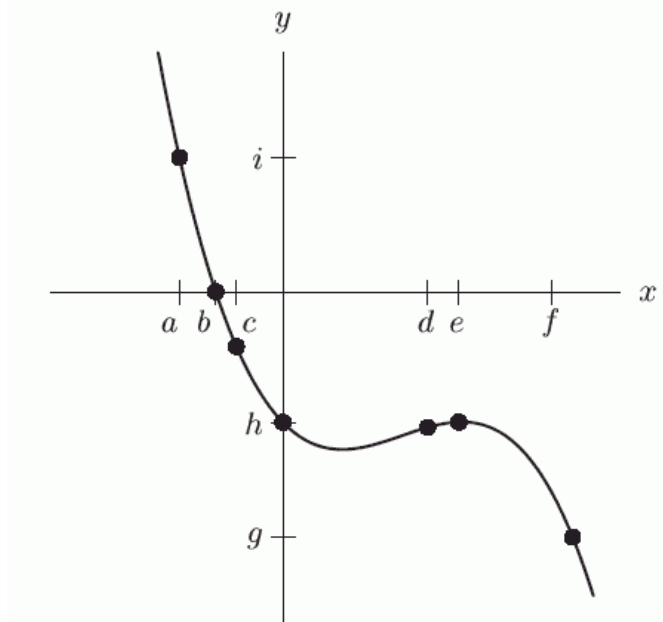
6. Let $y = p(x)$ be defined by the following graph. Is $p(f/2)$ closer to g , h or i ?



Ans: h

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas.; Use and interpret function notation. difficulty: medium

7. Let $y = p(x)$ be defined by the following graph. Which of the following are true?



- A) If $p(x) > 0$, then $x < b$.
- B) If $p(x) > 0$, then $x > b$.
- C) If $p(x) > i$, then $x < a$.
- D) If $p(x) > i$, then $x > a$.

Ans: A, C Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: medium

8. Write the relationship of population, P , as a function of time, t , in years using function notation. Assume a direct relationship.

- A) $P = f(t)$
- B) $t = f(P)$
- C) $t = f(1/P)$
- D) $P = f(1/t)$

Ans: A Learning Objective: Use and interpret function notation. difficulty: easy

9. If you were to draw a graph representing the total amount of concrete, A , used to pour x square feet of sidewalk, which axis would x be on?

- A) horizontal
- B) vertical

Ans: A Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: easy

10. Consider the information in the following table.

s	6	3	7	5	11	4	12
t	-4	3	1	-1	0	1	8

Could t be a function of s ?

Ans: yes

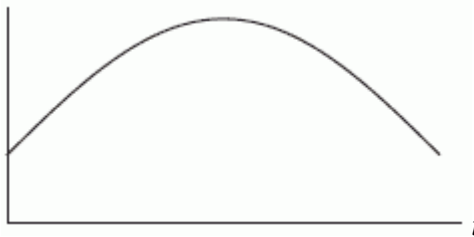
Learning Objective: Decide whether a given relation is a function. Decide whether a given relation is a function. Decide whether a given relation is a function.; Recognize when a relationship between two quantities determines a function and use and interpret function notation. difficulty: medium

11. You are looking at a graph of P , a function of t . Is it possible for the graph to intercept the P -axis 5 times?

Ans: no

Learning Objective: Decide whether a given relation is a function. difficulty: medium

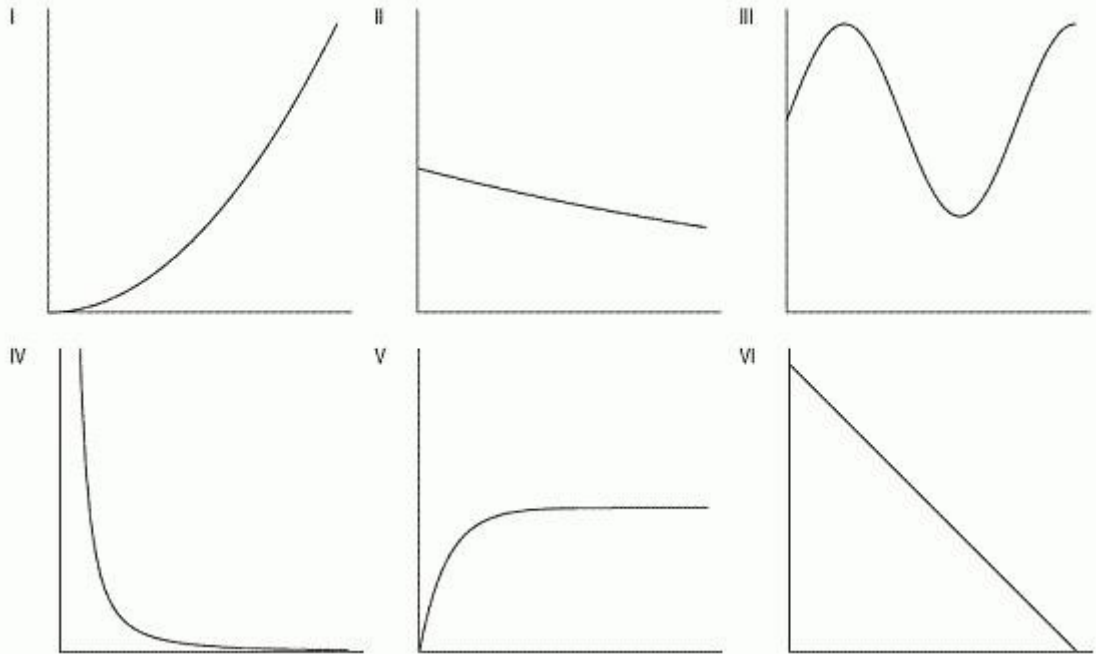
12. What could the following graph reasonably represent?



- A) The average daily temperature of Denver over a one-year time period with $t = 0$ being July 1.
- B) The average daily temperature of Denver over a one-year time period with $t = 0$ being January 1.
- C) The population of Denver between 1900 and 2000 with $t = 0$ being 1900.
- D) The infant mortality rate in Denver between 1900 and 2000 with $t = 0$ being 1900.

Ans: B Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: medium

13. Which of the following graphs is mostly likely to represent the resale price of a car which depreciates steadily until it is worthless?



Ans: VI

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: hard

14. You have \$90 to spend on lunches this month. Each day, you can pack a lunch for about \$1.75, or you can buy lunch at the cafeteria for \$5.25. Let p be the number of times you pack a lunch and b be the number of times you buy lunch. The formula for p in terms of b is given by $p = \underline{\hspace{1cm}} - \underline{\hspace{1cm}} b$. Round answers to 2 decimal places.

Part A: 51.43

Part B: 3.00

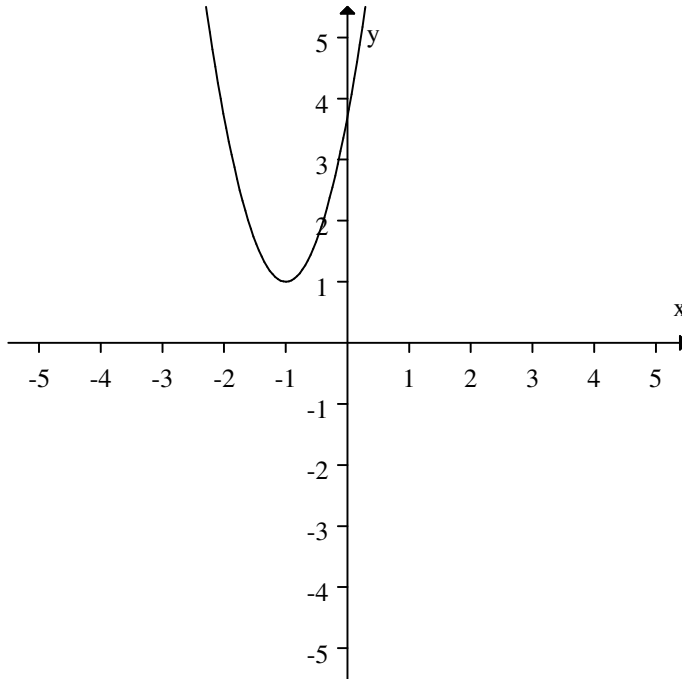
Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: medium

15. Find the value of the expression $x^2 - 3xy$ if $x = 3$ and $y = \frac{1}{5}$.

Ans: $\frac{36}{5}$ or $7\frac{1}{5}$

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: easy

16. Solve $f(x) = 0$ for x using the graph of $f(x)$ below.



Ans: There is no solution to the equation $f(x) = 0$.

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas.; Use and interpret function notation. difficulty: hard

17. Let $f(t)$ be the number of students (in thousands) attending MNO college t years after 2000. Which of the following statements gives the meaning of the expression $f(15) = 13$?

- A) The number of students attending MNO college in the year 2015 is 13,000.
- B) The number of students attending MNO college in the year 2000 is 13,000.
- C) The number of students attending MNO college in the year 2013 is 15,000.
- D) The number of students attending MNO college in the year 2000 is 15,000.

Ans: A Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: medium

18. The following chart gives the number of students in a class that are a specific height in inches

height	55 inches	60 inches	65 inches
number of students	4	7	6

- a) Is the number of students in each category a function of the height?
 b) Is the height in each category a function of the number of students in that category?

Ans: a) yes

b) yes

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: medium

19. The following chart gives the number of students in a class that are a specific height in inches

height	55 inches	60 inches	65 inches
number of students	5	7	4

- a) What is the most common height of students in this class?
 b) What is the least common height of students in this class?

Ans: a) 60 inches

b) 75 inches

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: easy

20. A box with volume 180 ft^3 has a square base of side length s ft and a height of h ft. Write a formula for the height of the box as a function of the side length of the box.

Ans: $h = \frac{180}{s^2}$

Learning Objective: Represent and interpret functions using words, tables, graphs, and formulas. difficulty: hard

21. Express this relationship in function notation (that is, y is a function of x is written $y = f(x)$).

Calories burned, c , is a function of activity, a .

Ans: $c = f(a)$

Learning Objective: Use and interpret function notation. difficulty: easy