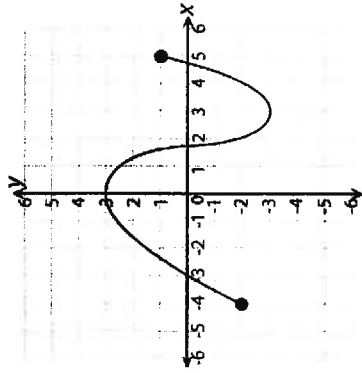


Directions: Answer the following question(s).

1 The graph of a function is shown below.



What is the domain of this function?

Use the on-screen keyboard to enter your answer as a compound inequality in the box below.

Web Only Interaction

2 On Tuesday nights, a skating rink offers a special student price.

- It costs \$2.00 for the first 20 minutes.
- After the first 20 minutes, it costs \$0.05 per minute.

Andrea skates every Tuesday night for a minimum of 30 minutes and a maximum of 1 hour. The time she skates places a restriction on the domain of the function that represents the cost for skating.

On the coordinate plane below, graph the portion of the function that best represents Andrea's cost for skating on Tuesday nights.

Web Only Interaction

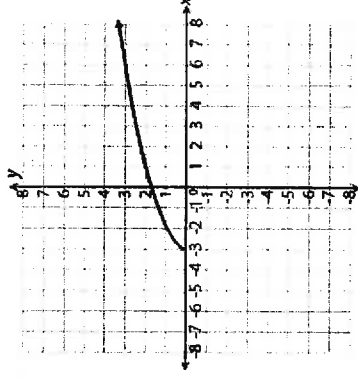
3 For each of the scenarios below, choose the domain, π , that BEST relates to the functional relationship described.

Drag and drop the correct domain in the box beside the scenario.

Web Only Interaction

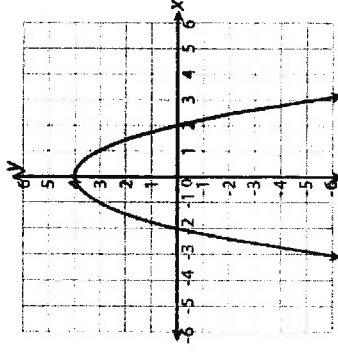
Directions: Answer the following question(s).

5 What is the domain of the function graphed below?



- A. all real numbers greater than or equal to -3
- B. all real numbers greater than or equal to 0
- C. all real numbers
- D. real numbers greater than or equal to 0 and less than 4

6 What is the domain of the function in the graph?



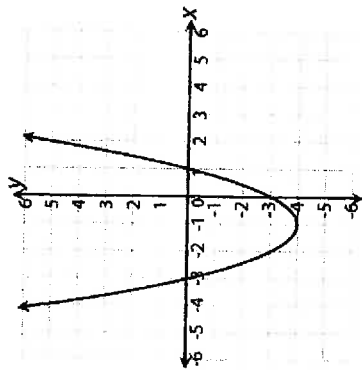
- A. $-2 \leq x \leq 2$
- B. $0 \leq x \leq 2$
- C. x is all real numbers less than or equal to 4
- D. x is all real numbers

7 Which of the following functions has the values of its range decrease as the values in its domain increase?

- A. $y = -2x + 4$
- B. $y = \frac{1}{3}x$
- C. $y = 2x + 5$
- D. $y = -\frac{1}{3}$

Directions: Answer the following question(s).

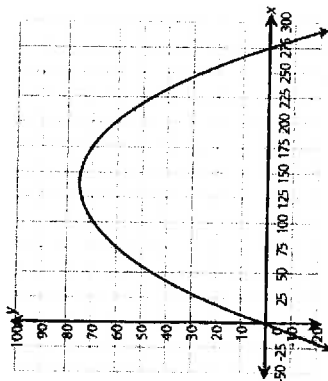
- 8 Tasha records the relationship between two variables she is studying in chemistry lab. After several repetitions, she plots the data and finds a quadratic function to model the association between the two variables. Look at the graph of her quadratic function.



What is the domain of Tasha's function as shown by the graph?

- A. $[-4, 2]$
- B. $(-\infty, \infty)$
- C. $[-3, 1]$
- D. $(-4, \infty)$

- 9 The graph shows a function that models the trajectory of a golf ball.

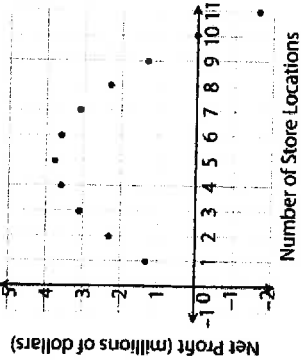


What is the domain of the function in terms of this context?

- A. $(-\infty, 74)$
- B. $(-\infty, \infty)$
- C. $[0, 74]$
- D. $[0, 275]$

Directions: Answer the following question(s).

- 10 The chief financial officer for an office supply company presents a function to the company president. The function models the number of proposed stores (up to 11) and the projected net profit for the company. The graph for the function is shown.



What is the domain of the function?

- A. integer numbers from -1 to 11
- B. real numbers from 1 to 11
- C. real numbers from -1 to 11
- D. integer numbers from 1 to 11

- 11 A company that installs tile flooring uses this function to estimate the amount of adhesive needed, in gallons, to tile a floor having an area of n square feet.

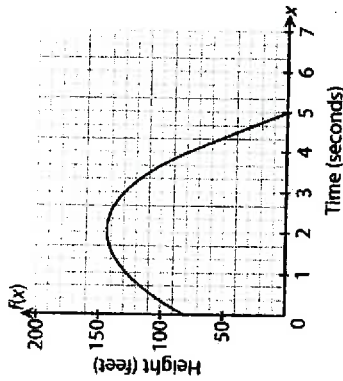
$$f(n) = \sqrt{n} + 1$$

Which best describes the domain of the function in this situation?

- A. $n > 0$
- B. $n < 1$
- C. $n < 0$
- D. $n > 1$

- 12 A swimming pool is being drained so it can be cleaned. The amount of water in the pool is changing according to the function $f(t) = 80,000 - 16,000t$, where $t =$ time in hours and $f(t) =$ amount of water in liters. What is the domain of this function in this situation? Explain how you found your answer.

- 13 A ball is launched upwards with a slingshot from the top of an 80-foot building. The graph below shows the function that models the trajectory of the ball.



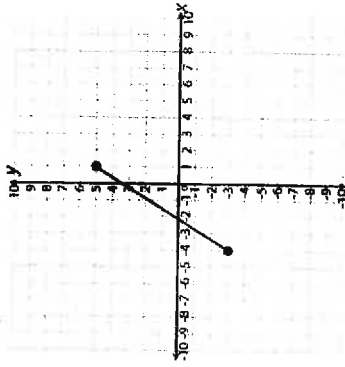
Time (seconds)

Use the drop-down menu to select the correct answers to complete the statement.

Web Only Interaction

Directions: Answer the following question(s).

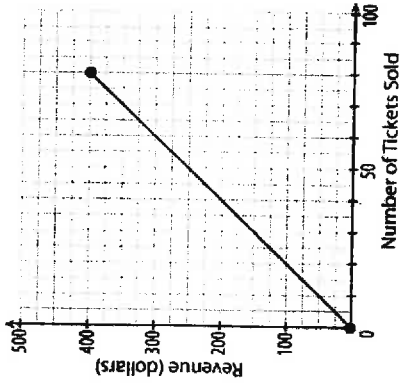
14 The graph of a function is shown on the coordinate plane below.



What is the domain of the function?

- A. $-4 < x < 1$
- B. $-3 \leq x \leq 5$
- C. $-4 \leq x \leq 1$
- D. $-3 < x < 5$

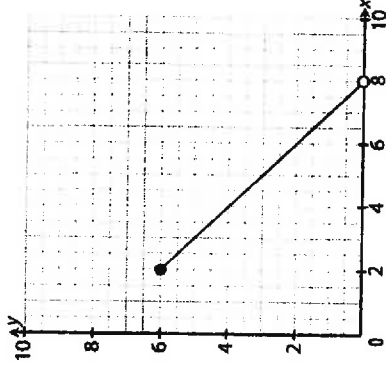
15 To raise money, a school band is selling tickets to a breakfast. The graph on the coordinate grid below shows the functional relationship between the number of tickets sold and the revenue.



What is the domain of the function?

- A. integers from 0 to 400
- B. real numbers from 0 to 500
- C. integers from 0 to 80
- D. real numbers from 0 to 100

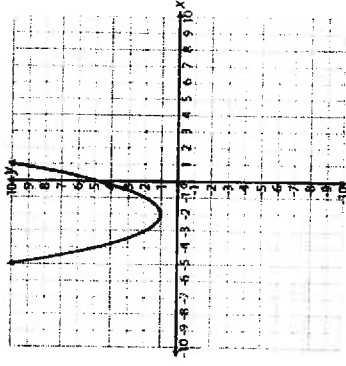
16 The coordinate grid below shows the graph of a function.



What appears to be the domain of the function?

- A. $2 \leq x < 8$
- B. $0 \leq y \leq 6$
- C. $2 \leq x \leq 8$
- D. $0 < y \leq 6$

17 The graph of $f(x) = x^2 + 4x + 5$ is shown.

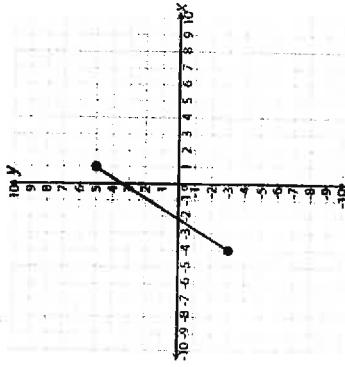


What is the domain of the function?

- A. positive rational numbers
- B. rational numbers
- C. positive real numbers
- D. real numbers

Directions: Answer the following question(s).

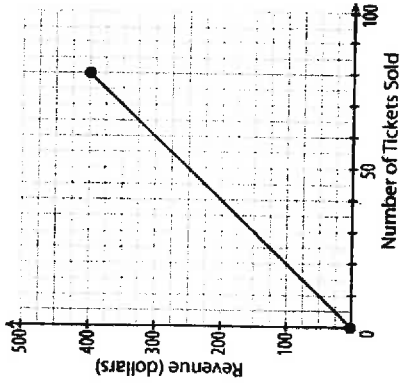
14 The graph of a function is shown on the coordinate plane below.



What is the domain of the function?

- A. $-4 < x < 1$
- B. $-3 \leq x \leq 5$
- C. $-4 \leq x \leq 1$
- D. $-3 < x < 5$

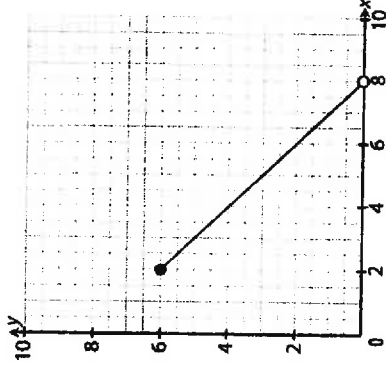
15 To raise money, a school band is selling tickets to a breakfast. The graph on the coordinate grid below shows the functional relationship between the number of tickets sold and the revenue.



What is the domain of the function?

- A. integers from 0 to 400
- B. real numbers from 0 to 500
- C. integers from 0 to 80
- D. real numbers from 0 to 100

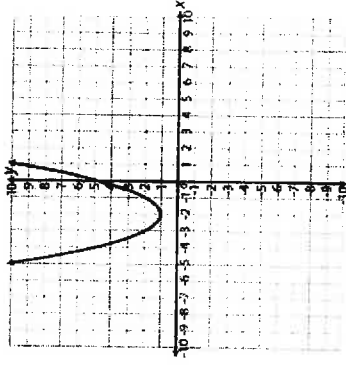
16 The coordinate grid below shows the graph of a function.



What appears to be the domain of the function?

- A. $2 \leq x < 8$
- B. $0 \leq y \leq 6$
- C. $2 \leq x \leq 8$
- D. $0 < y \leq 6$

17 The graph of $f(x) = x^2 + 4x + 5$ is shown.

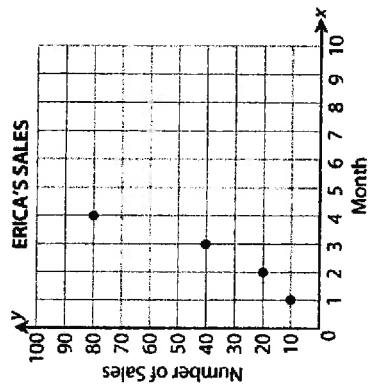


What is the domain of the function?

- A. positive rational numbers
- B. rational numbers
- C. positive real numbers
- D. real numbers

Directions: Answer the following question(s).

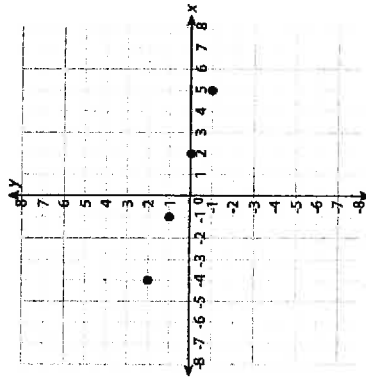
- 18 Erica recorded the number of sales she made during each of the first 4 months when she began her new career. Erica plotted the data on a coordinate grid, and she noted that the data correlate to an exponential equation, as shown.



What is the domain of the function shown in the graph?

- A. $\{x : x \text{ is a whole number less than or equal to } 100\}$
- B. $\{10, 20, 40, 80\}$
- C. $\{1, 2, 3, 4\}$
- D. $\{x : x \text{ is a whole number less than or equal to } 10\}$

- 19 Consider the function $f(x)$ shown in the graph.



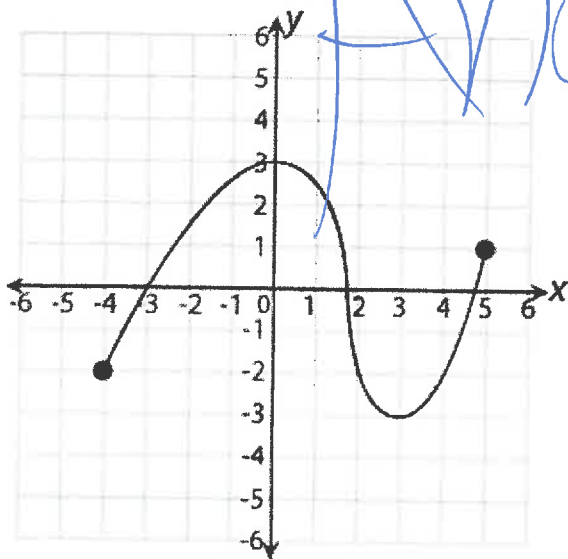
Identify two values that are in the domain of f , and two values that are not in the domain of f .

Choose values from the list below. Drag and drop TWO values into each category in the table below.

Web Only Interaction

Directions: Answer the following question(s).

1 The graph of a function is shown below.



What is the domain of this function?

Use the on-screen keyboard to enter your answer as a compound inequality in the box below.

Web Only Interaction

Master ID: 2115461 Revision: 6
 Rubric: 1 Point(s)
 The domain is the set of all possible x-values. The graph shows that the function is defined from all x-values from -4 to 5. This domain can be described by the compound inequality $-4 \leq x \leq 5$.
 Standards:
 CCSS.Math.Content.HSF-IF.B.5

2 On Tuesday nights, a skating rink offers a special student price.

- It costs \$2.00 for the first 20 minutes.
- After the first 20 minutes, it costs \$0.05 per minute.

Andrea skates every Tuesday night for a minimum of 30 minutes and a maximum of 1 hour. The time she skates places a restriction on the domain of the function that represents the cost for skating.

On the coordinate plane below, graph the portion of the function that best represents Andrea's cost for skating on Tuesday nights.

Web Only Interaction

Master ID: 2115453 Revision: 5
 Rubric: 1 Point(s)
 The cost can be described by a piecewise function. For $0 \leq x \leq 20$, $f(x) = 2$, and $x > 20$, $f(x) = 2 + 0.05(x - 20)$. Andrea skates anywhere from 30 to 60 minutes, so the graph starts at 30 on the x-scale and goes to 60. $f(30) = 2 + 0.05(30 - 20) = 2.5$ and $f(60) = 2 + 0.05(60 - 20) = 4$. So, the graph is a line segment that goes from (30, 2.5) to (60, 4).
 Standards:
 CCSS.Math.Content.HSF-IF.B.5

3 For each of the scenarios below, choose the domain, n , that BEST relates to the functional relationship described.

Drag and drop the correct domain in the box beside the scenario.

Web Only Interaction

Master ID: 2115460 Revision: 5
 Rubric: 1 Point(s)
 In the first scenario, it is possible to bake only whole cakes, so the domain is the positive integers. In scenario 2, the hiker can hike any positive real number hours. In the last scenario, all real numbers have a cube root.
 Standards:
 CCSS.Math.Content.HSF-IF.B.5

Directions: Answer the following question(s).

7 Which of the following functions has the values of its range decrease as the values in its domain increase?

- A. $y = -2x + 4$
- B. $y = \frac{1}{3}x$
- C. $y = 2x + 5$
- D. $y = -\frac{1}{3}$

Master ID: 308666 Revision: 4

Correct: A

Rationale:

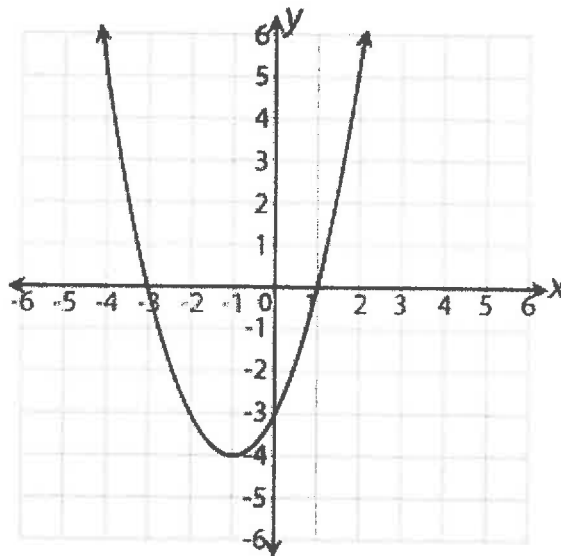
- A. This function has a negative slope, so the values of the range are decreasing as the values of the domain increase.
- B. This function has a larger run than rise, so the range values increase more slowly than the domain values, but it is still an increasing function.
- C. This function has increasing values of the range over increasing values of the domain.
- D. This function is negative, but it is a horizontal line, so the values of the range remain constant as the values of the domain increase.

Rubric: 1 Point(s)

Standards:

CCSS.Math.Content.HSF-IF.B.5

8 Tasha records the relationship between two variables she is studying in chemistry lab. After several repetitions, she plots the data and finds a quadratic function to model the association between the two variables. Look at the graph of her quadratic function.



What is the domain of Tasha's function as shown by the graph?

- A. $[-4, 2]$
- B. $(-\infty, \infty)$
- C. $[-3, 1]$
- D. $(-4, \infty)$

Master ID: 308659 Revision: 5

Correct: B

Rationale:

- A. The visible top of the graph crosses points $(-4, 5)$ and $(2, 5)$. It is then assumed that $[-4, 2]$ defines the domain.
- B. The graph shows a function that has a domain made up of all real numbers.
- C. These are the roots of the function.
- D. This set defines the range for the function, but the question asks for the domain.

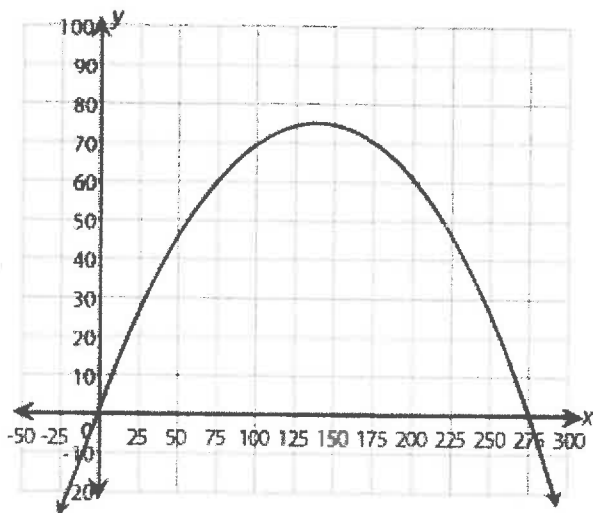
Rubric: 1 Point(s)

Standards:

CCSS.Math.Content.HSF-IF.B.5

Directions: Answer the following question(s).

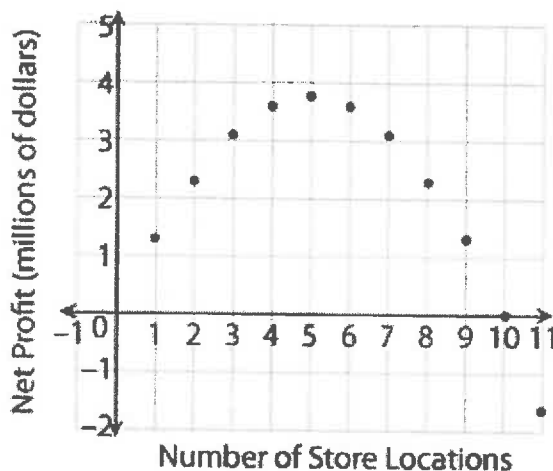
- 9 The graph shows a function that models the trajectory of a golf ball.



What is the domain of the function in terms of this context?

- A. $(-\infty, 74)$
- B. $(-\infty, \infty)$
- C. $[0, 74]$
- D. $[0, 275]$

- 10 The chief financial officer for an office supply company presents a function to the company president. The function models the number of proposed stores (up to 11) and the projected net profit for the company. The graph for the function is shown.



What is the domain of the function?

- A. integer numbers from -1 to 11
- B. real numbers from 1 to 11
- C. real numbers from -1 to 11
- D. integer numbers from 1 to 11

Master ID:	308658	Revision:	5
Correct:	D		
Rationale:			
A. Without the context, this is the correct range for the function. The question asks for the domain, however, in terms of the trajectory of the golf ball.			
B. Without context, this is the correct domain for the function. The question asks for the domain in terms of the trajectory of the golf ball, however, so this is not correct.			
C. This is the correct range for the function.			
D. This is the correct domain given the context of what the function represents. The height cannot be a negative value.			
Rubric:	1 Point(s)		
Standards:	CCSS.Math.Content.HSF-IF.B.5		

Directions: Answer the following question(s).

Master ID: 308657 Revision: 4

Correct: D

Rationale:

- A. There can't be a negative number of stores for this context, and there must be at least one store to have a profit. The domain must be integer numbers from 1 to 11.
- B. There must be at least one store to have a profit, and the model is intended to go up to 11 stores. There can't be a fractional number of stores, so the domain must be integer numbers.
- C. There can't be a negative number of stores for this context, and there must be at least one store to have a profit. The domain must be integer numbers since it represents the number of stores.
- D. There must be at least one store to have a profit, and the model is intended to go up to 11 stores. Since there can't be a fractional number of stores, the domain is restricted to integers from 1 to 11.

Rubric: 1 Point(s)

Standards:

CCSS.Math.Content.HSF-IF.B.5

- 11 A company that installs tile flooring uses this function to estimate the amount of adhesive needed, in gallons, to tile a floor having an area of n square feet.

$$f(n) = \sqrt{n} + 1$$

Which best describes the domain of the function in this situation?

- A. $n > 0$
- B. $n < 1$
- C. $n < 0$
- D. $n > 1$

Master ID: 308646 Revision: 5

Correct: A

Rationale:

- A. The area of a floor must have a positive number of square feet.
- B. This uses the 1 in the function and describes floors having areas of 1 square foot or less, including having negative areas.
- C. This describes a floor having a negative area, which is impossible.
- D. This describes floors with areas greater than 1 square feet, although it is theoretically possible to have a floor with an area greater than 0 but less than 1 square foot.

Rubric: 1 Point(s)

Standards:

CCSS.Math.Content.HSF-IF.B.5

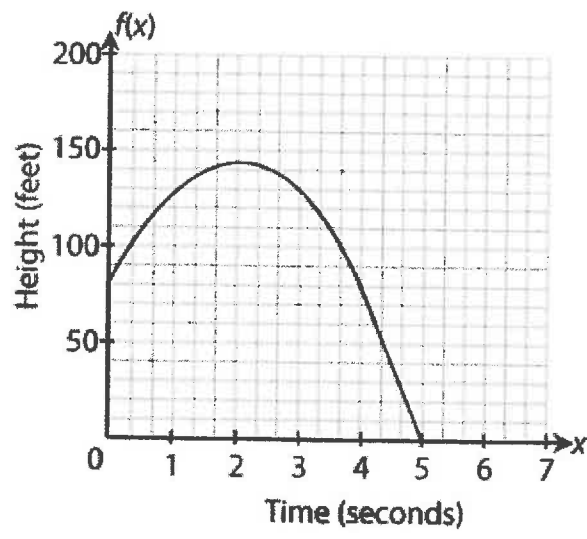
Directions: Answer the following question(s).

- 12 A swimming pool is being drained so it can be cleaned. The amount of water in the pool is changing according to the function $f(t) = 80,000 - 16,000t$, where t = time in hours and $f(t)$ = amount of water in liters. What is the domain of this function in this situation? Explain how you found your answer.

Master ID: 2115455 Revision: 4
 Rubric: 1 Point(s)
 This function has time as an input or domain. Looking at the x-axis you can see that the domain is all real numbers from 0 to 5 seconds.
 Standards:
 CCSS.Math.Content.HSF-IF.B.5

Master ID: 308671 Revision: 4
 Rubric: 2 Point(s)
 2 The response is correct and complete. A sample 2-point response is shown below.
 1 The response is partially correct.
 This level may include the correct domain without an adequate explanation, or an incorrect domain with an explanation indicating some understanding.
 0 The response is incorrect or there is no response.
 Standards:
 CCSS.Math.Content.HSF-IF.B.5

- 13 A ball is launched upwards with a slingshot from the top of an 80-foot building. The graph below shows the function that models the trajectory of the ball.

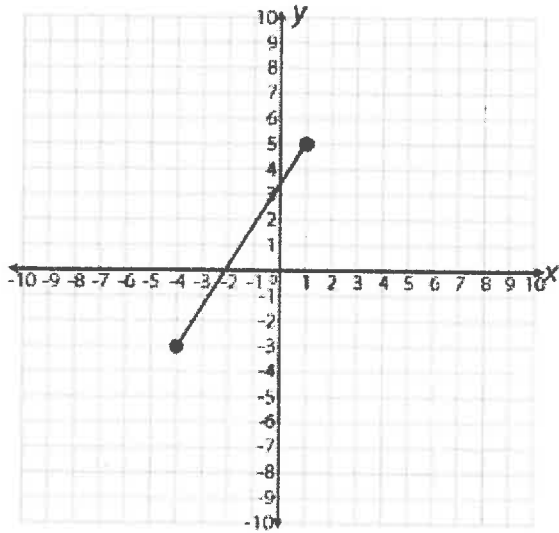


Use the drop-down menu to select the correct answers to complete the statement.

Web Only Interaction

Directions: Answer the following question(s).

- 14 The graph of a function is shown on the coordinate plane below.

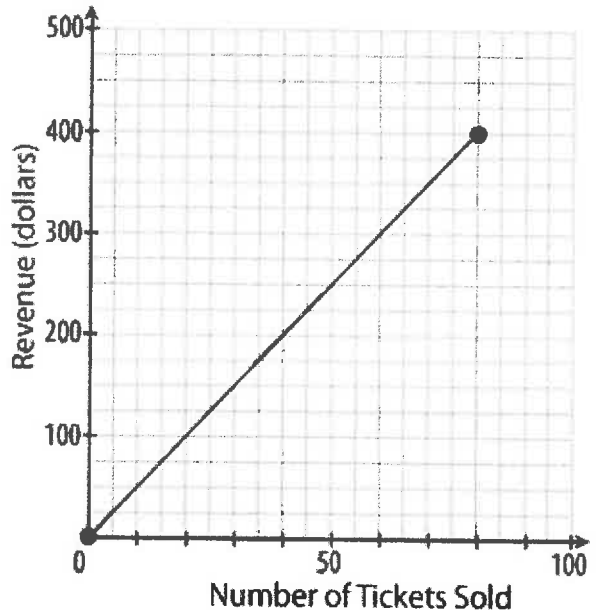


What is the domain of the function?

- A. $-4 < x < 1$
- B. $-3 \leq x \leq 5$
- C. $-4 \leq x \leq 1$
- D. $-3 < x < 5$

Master ID:	490976	Revision:	5
Correct:	C		
Rationale:			
A. This is the result of omitting the end points from the domain of the function.			
B. This is the result of using the minimum and maximum values of the range for the domain.			
C. This answer is correct because -4 and 1 are the minimum and maximum values of x .			
D. This is the result of using the minimum and maximum values of the range for the domain and omitting the end points.			
Rubric:	1 Point(s)		
Standards:			
CCSS.Math.Content.HSF-IF.B.5			

- 15 To raise money, a school band is selling tickets to a breakfast. The graph on the coordinate grid below shows the functional relationship between the number of tickets sold and the revenue.



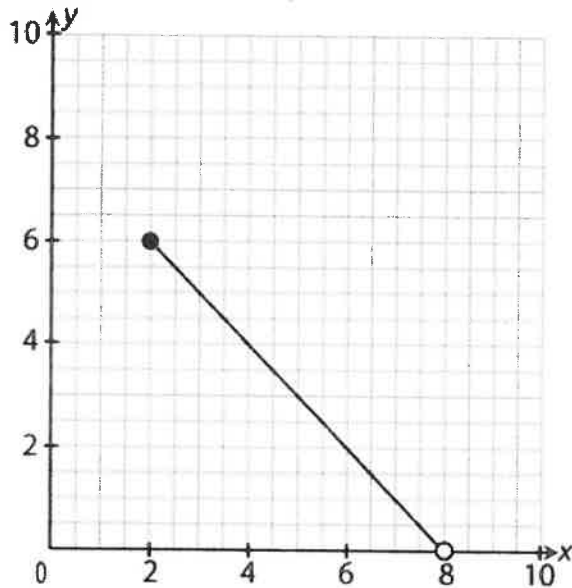
What is the domain of the function?

- A. integers from 0 to 400
- B. real numbers from 0 to 500
- C. integers from 0 to 80
- D. real numbers from 0 to 100

Master ID:	548412	Revision:	4
Correct:	C		
Rationale:			
A. This response is the incorrect result of using the range as the domain.			
B. This response is the incorrect result of using the numbers on the vertical axis as the domain.			
C. This response is the result of correctly reading the minimum and maximum values for the independent variable.			
D. This response is the incorrect result of using the numbers on the horizontal axis as the domain.			
Rubric:	1 Point(s)		
Standards:			
CCSS.Math.Content.HSF-IF.B.5			

Directions: Answer the following question(s).

- 16 The coordinate grid below shows the graph of a function.

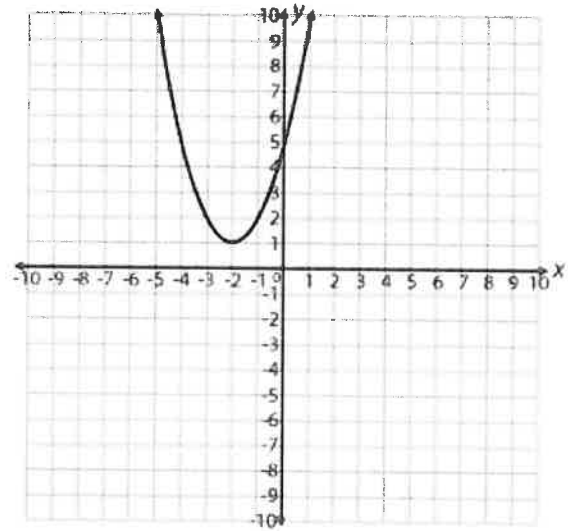


What appears to be the domain of the function?

- A. $2 \leq x < 8$
- B. $0 \leq y \leq 6$
- C. $2 \leq x \leq 8$
- D. $0 < y \leq 6$

Master ID:	490939	Revision:	5
Correct:	A		
Rationale:			
A. This correctly identifies 2 and 8 as the end points of the line; 2 is included in the domain, but 8 is not.			
B. This incorrectly uses the values for the range as the domain and includes the end point 0.			
C. This is the incorrect result of including 8 in the domain.			
D. This incorrectly uses the values for the range as the domain.			
Rubric:	1 Point(s)		
Standards:			
CCSS.Math.Content.HSF-IF.B.5			

- 17 The graph of $f(x) = x^2 + 4x + 5$ is shown.



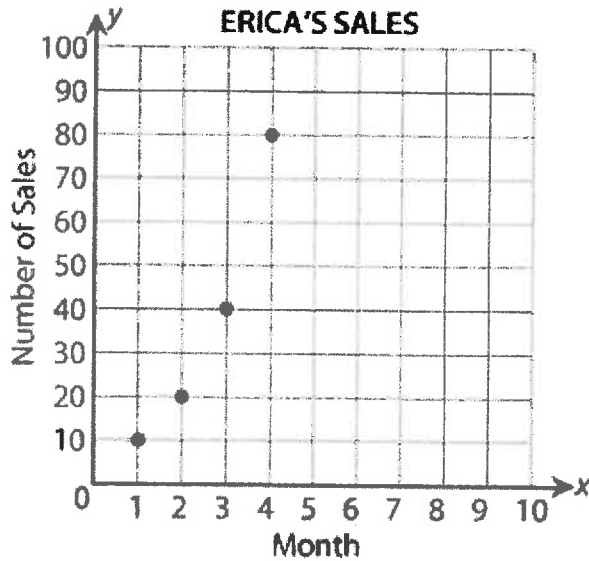
What is the domain of the function?

- A. positive rational numbers
- B. rational numbers
- C. positive real numbers
- D. real numbers

Master ID:	2310180	Revision:	4
Correct:	D		
Rationale:			
A. This results from confusion between rational and real numbers, and possibly also between domain and range, since the range includes only positive real numbers.			
B. This results from confusion between rational and real numbers. The domain includes both rational and irrational real numbers.			
C. This is close to the range of the function which is real numbers from 1 (inclusive) to infinity, but the question asks for the domain.			
D. This is the correct domain.			
Rubric:	1 Point(s)		
Standards:			
CCSS.Math.Content.HSF-IF.B.5			

Directions: Answer the following question(s).

- 18 Erica recorded the number of sales she made during each of the first 4 months when she began her new career. Erica plotted the data on a coordinate grid, and she noted that the data correlate to an exponential equation, as shown.

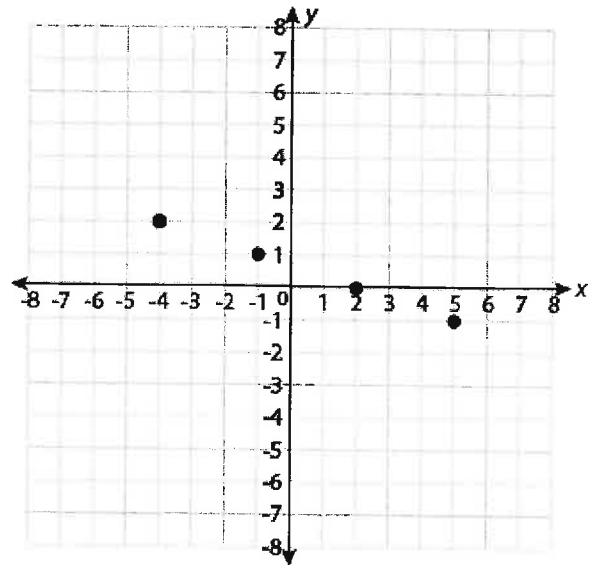


What is the domain of the function shown in the graph?

- A. $\{x : x \text{ is a whole number less than or equal to } 100\}$
- B. $\{10, 20, 40, 80\}$
- C. $\{1, 2, 3, 4\}$
- D. $\{x : x \text{ is a whole number less than or equal to } 10\}$

Master ID:	2351394	Revision:	4
Correct:	C		
Rationale:	<ul style="list-style-type: none"> A. This is the result of using the numbers that appear on the y-axis of the graph. B. This is the result of using the y-coordinates of each point. C. The points on the graph have x-coordinates of 1, 2, 3, and 4. D. This is the result of using the numbers that appear on the x-axis of the graph. 		
Rubric:	1 Point(s)		
Standards:	CCSS.Math.Content.HSF-IF.B.5		

- 19 Consider the function $f(x)$ shown in the graph.



Identify two values that are in the domain of f , and two values that are not in the domain of f .

Choose values from the list below. Drag and drop TWO values into each category in the table below.

Web Only Interaction

Master ID:	2228413	Revision:	4
Rubric:	1 Point(s)		
Correct values in the domain are:	-4, -1, 2		
Correct values NOT in the domain are:	0, 1, 3		
Standards:	CCSS.Math.Content.HSF-IF.B.5		

