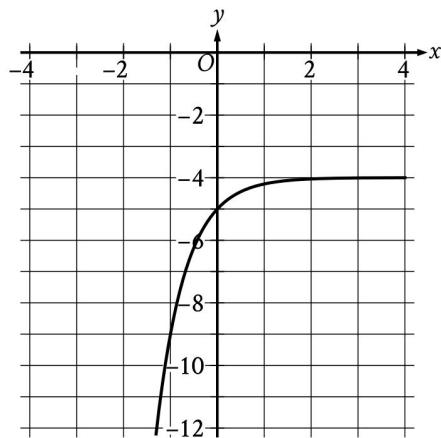


# SAT Math

## Nonlinear Functions 1

Question # ID

1.1 6abec9a8



What is the  $y$ -intercept of the graph shown?

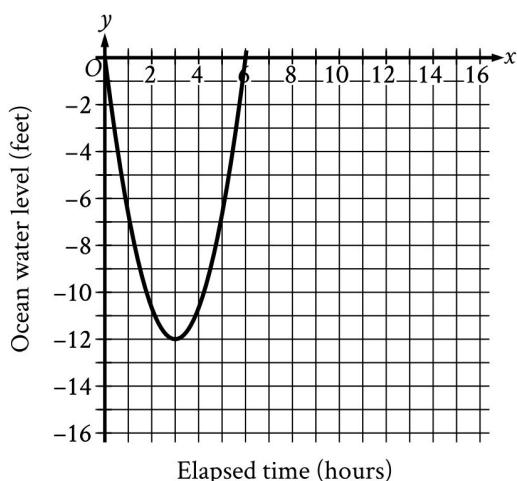
- A.  $(-1, -9)$
- B.  $(0, -5)$
- C.  $(0, -4)$
- D.  $(0, 0)$

## SAT Math

## Nonlinear Functions 1

Question # ID

1.2 1ee962ec



Scientists recorded data about the ocean water levels at a certain location over a period of 6 hours. The graph shown models the data, where  $y = 0$  represents sea level. Which table gives values of  $x$  and their corresponding values of  $y$  based on the model?

A.	$x$	$y$
	0	-12
	0	3
	3	6

C.	$x$	$y$
	0	0
	3	-12
	6	0

B.	$x$	$y$
	0	0
	3	12
	0	-6

D.	$x$	$y$
	0	0
	12	3
	-6	0

1.3 788bfd56

The function  $f$  is defined by  $f(x) = 4 + \sqrt{x}$ . What is the value of  $f(144)$ ?

- A. 0
- B. 16
- C. 40
- D. 76

# SAT Math

## Nonlinear Functions 1

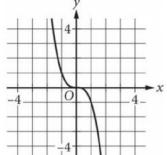
**Question # ID**

**1.4** b39d74a0

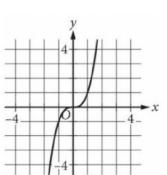
<i>x</i>	<i>y</i>
0	0
1	1
2	8
3	27

The table shown includes some values of *x* and their corresponding values of *y*. Which of the following graphs in the *xy*-plane could represent the relationship between *x* and *y*?

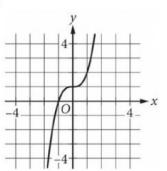
A.



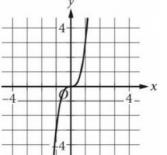
B.



C.



D.



**1.5** 5377d9cf

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$$\text{If } f(x) = \frac{x^2 - 6x + 3}{x - 1},$$

what is  $f(-1)$ ?

A. -5

B. -2

C. 2

D. 5

# SAT Math

## Nonlinear Functions 1

**Question #** **ID**

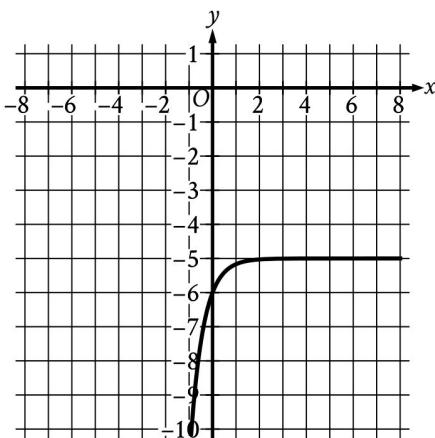
**1.6** 75915e3c

$$f(x) = 2(3^x)$$

For the function  $f$  defined above, what is the value of  $f(2)$ ?

- A. 9
- B. 12
- C. 18
- D. 36

**1.7** 7160cbb3



What is the  $y$ -intercept of the graph shown?

- A.  $(0, -6)$
- B.  $(-6, 0)$
- C.  $(0, 0)$
- D.  $(-5, -5)$

**1.8** 72ae8a87

The function  $f(x) = 200,000(1.21)^x$  gives a company's predicted annual revenue, in dollars,  $x$  years after the company started selling light bulbs online, where  $0 < x \leq 10$ . What is the best interpretation of the statement " $f(5)$  is approximately equal to 518,748" in this context?

- A. 5 years after the company started selling light bulbs online, its predicted annual revenue is approximately 518,748 dollars.
- B. 5 years after the company started selling light bulbs online, its predicted annual revenue will have increased by a total of approximately 518,748 dollars.
- C. When the company's predicted annual revenue is approximately 518,748 dollars, it is 5 times the predicted annual revenue for the previous year.
- D. When the company's predicted annual revenue is approximately 518,748 dollars, it is 5% greater than the predicted annual revenue for the previous year.

# SAT Math

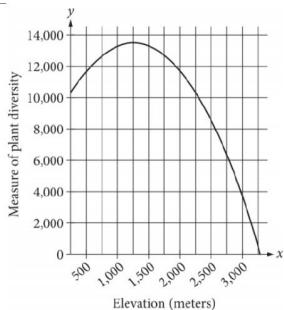
## Nonlinear Functions 1

Question # ID

1.9 09f58996

The function  $f$  is defined by  $f(x) = 6 + \sqrt{x}$ . What is the value of  $f(36)$ ?

1.10 ebe4bde0



The quadratic function graphed above models a particular measure of plant diversity as a function of the elevation in a region of Switzerland. According to the model, which of the following is closest to the elevation, in meters, at which plant diversity is greatest?

- A. 13,500
- B. 3,000
- C. 1,250
- D. 250

# SAT Math

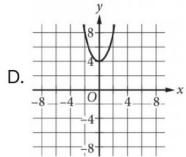
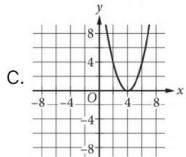
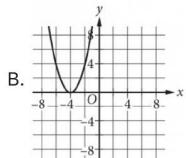
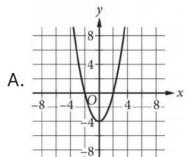
## Nonlinear Functions 1

Question # ID

1.11 d46da42c

$$f(x) = x^2 + 4$$

The function  $f$  is defined as shown. Which of the following graphs in the  $xy$ -plane could be the graph of  $y = f(x)$ ?



1.12 79ba511a

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The function  $f$  is defined by  $f(x) = x^3 + 15$ . What is the value of  $f(2)$ ?

A. 20

B. 21

C. 23

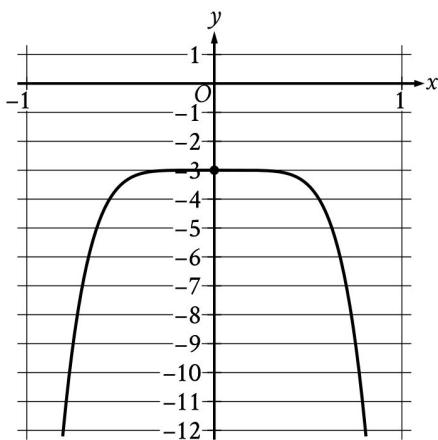
D. 24

## SAT Math

## Nonlinear Functions 1

Question # ID

1.13 50418728



The graph of the polynomial function  $f$ , where  $y = f(x)$ , is shown. The  $y$ -intercept of the graph is  $(0, y)$ . What is the value of  $y$ ?

1.14 ee05c84e

$$f(x) = (x + 0.25x)(50 - x)$$

The function  $f$  is defined above. What is the value of  $f(20)$ ?

- A. 250
- B. 500
- C. 750
- D. 2,000

1.15 39652e93

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The function  $f$  is defined by  $f(x) = \frac{16}{x}$ . What is the value of  $f(x)$  when  $x = 17$ ?

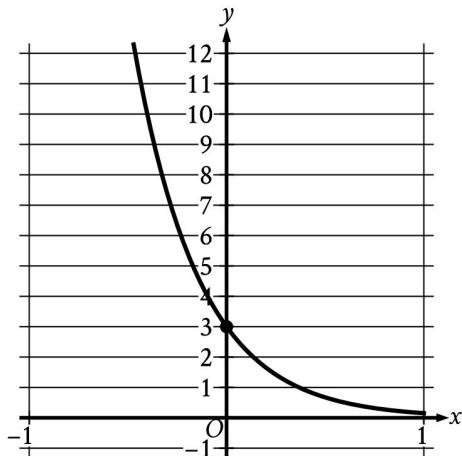
- A.  $\frac{16}{17}$
- B.  $\frac{17}{16}$
- C. 16
- D. 17

# SAT Math

## Nonlinear Functions 1

Question # ID

1.16 02c67921



The graph of the exponential function  $f$  is shown, where  $y = f(x)$ . The  $y$ -intercept of the graph is  $(0, y)$ . What is the value of  $y$ ?

1.17 1863e3be

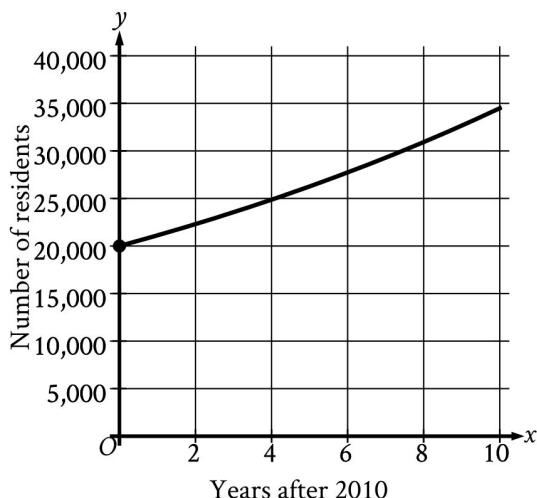
The  $y$ -intercept of the graph of  $y = x^2 + 31$  in the  $xy$ -plane is  $(0, y)$ . What is the value of  $y$ ?

## SAT Math

## Nonlinear Functions 1

Question # ID

1.18 2d394c28



The graph shown models the number of residents of a certain city  $x$  years after 2010. How many residents does this model estimate the city had in 2010?

- A. 0
- B. 2,000
- C. 20,000
- D. 25,000

1.19 20722644

The function  $f$  is defined by  $f(x) = x^3 + 9$ . What is the value of  $f(2)$ ?

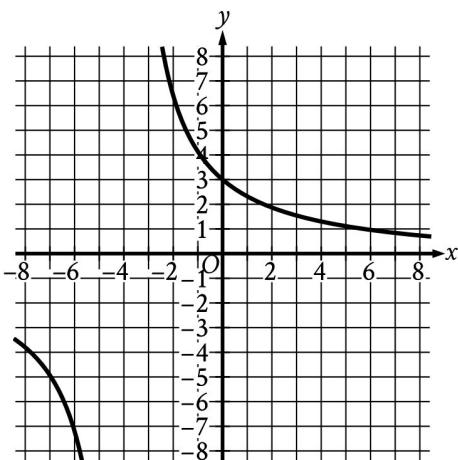
- A. 14
- B. 15
- C. 17
- D. 18

# SAT Math

## Nonlinear Functions 1

**Question #** ID

**1.20** d45572cc



The graph of  $y = f(x)$  is shown in the  $xy$ -plane. The value of  $f(0)$  is an integer. What is the value of  $f(0)$ ?

**1.21** 044c1cb7

$$h(x) = x^2 - 3$$

Which table gives three values of  $x$  and their corresponding values of  $h(x)$  for the given function  $h$ ?

- |    |        |   |   |   |
|----|--------|---|---|---|
| A. | $x$    | 1 | 2 | 3 |
|    | $h(x)$ | 4 | 5 | 6 |
- 
- |    |        |    |   |   |
|----|--------|----|---|---|
| B. | $x$    | 1  | 2 | 3 |
|    | $h(x)$ | -2 | 1 | 6 |
- 
- |    |        |    |   |   |
|----|--------|----|---|---|
| C. | $x$    | 1  | 2 | 3 |
|    | $h(x)$ | -1 | 1 | 3 |
- 
- |    |        |    |   |   |
|----|--------|----|---|---|
| D. | $x$    | 1  | 2 | 3 |
|    | $h(x)$ | -2 | 1 | 3 |

**1.22** 0ad5012e

$$y = -\frac{1}{4}x^2 + 2x + 29$$

The given equation models a company's scheduled deliveries over 8 months, where  $y$  is the estimated number of scheduled deliveries  $x$  months after the end of May 2012, where  $0 \leq x \leq 8$ . Which statement is the best interpretation of the  $y$ -intercept of the graph of this equation in the  $xy$ -plane?

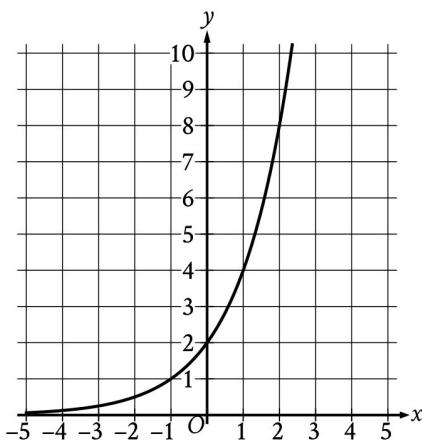
- A. At the end of May 2012, the estimated number of scheduled deliveries was 0.
- B. At the end of May 2012, the estimated number of scheduled deliveries was 29.
- C. At the end of June 2012, the estimated number of scheduled deliveries was 0.
- D. At the end of June 2012, the estimated number of scheduled deliveries was 29.

# SAT Math

## Nonlinear Functions 1

Question # ID

1.23 b5c43226



What is the  $y$ -intercept of the graph shown?

- A.  $(0, 0)$
- B.  $(0, 2)$
- C.  $(2, 0)$
- D.  $(2, 2)$

1.24 d84a514a

The function  $f(x) = 240,000(1.22)^x$  gives a company's predicted annual revenue, in dollars,  $x$  years after the company started selling jewelry online, where  $0 < x \leq 10$ . What is the best interpretation of the statement " $f(5)$  is approximately equal to 648,650" in this context?

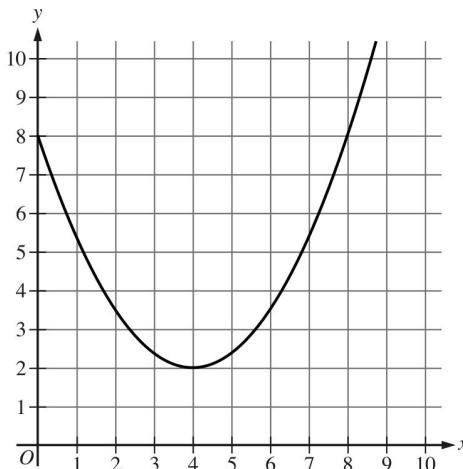
- A. 5 years after the company started selling jewelry online, its predicted annual revenue is approximately 648,650 dollars.
- B. 5 years after the company started selling jewelry online, its predicted annual revenue will have increased by a total of approximately 648,650 dollars.
- C. When the company's predicted annual revenue is approximately 648,650 dollars, it is 5 times the predicted annual revenue for the previous year.
- D. When the company's predicted annual revenue is approximately 648,650 dollars, it is 5% greater than the predicted annual revenue for the previous year.

# SAT Math

## Nonlinear Functions 1

Question # ID

1.25 5e63b9cf



The graph shows a marble's height above the ground  $y$ , in inches,  $x$  seconds after it started moving on an elevated track of a marble run. Which of the following is the best interpretation of the  $y$ -intercept of the graph?

- A. The marble's height was 0 inches above the ground 8 seconds after it started moving.
- B. The marble's height was 8 inches above the ground when it started moving.
- C. The marble's minimum height was 0 inches above the ground.
- D. The marble's minimum height was 8 inches above the ground.

1.26

cfff8f8e

At the time of posting a video, a social media channel had 53 subscribers. Each day for five days after the video was posted, the number of subscribers doubled from the number the previous day. Which equation gives the total number of subscribers,  $n$ , to the channel  $d$  days after the video was posted?

- A.  $n = 53^d$
- B.  $n = 53(2)^d$
- C.  $n = 53(0.5)^d$
- D.  $n = 53^{\frac{d}{2}} + d$