

Question ID 8e3878fd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 8e3878fd

$$P(t) = 1,800(1.02)^t$$

The function P gives the estimated number of marine mammals in a certain area, where t is the number of years since a study began. What is the best interpretation of $P(0) = 1,800$ in this context?

- A. The estimated number of marine mammals in the area was **102** when the study began.
- B. The estimated number of marine mammals in the area was **1,800** when the study began.
- C. The estimated number of marine mammals in the area increased by **102** each year during the study.
- D. The estimated number of marine mammals in the area increased by **1,800** each year during the study.

Question ID 21be3fbd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 21be3fbd

The function g is defined by $g(x) = |x + 18|$. What is the value of $g(4)$?

- A. -18
- B. -4
- C. 14
- D. 22

Question ID d08a5d15

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: d08a5d15

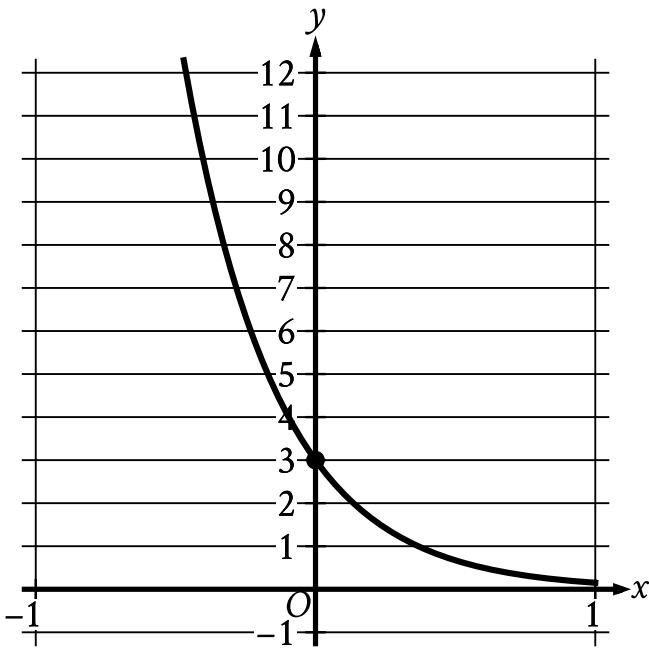
The function f is defined by $f(x) = 5x^2$. What is the value of $f(8)$?

- A. 40
- B. 50
- C. 80
- D. 320

Question ID feea2bbd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: feea2bbd



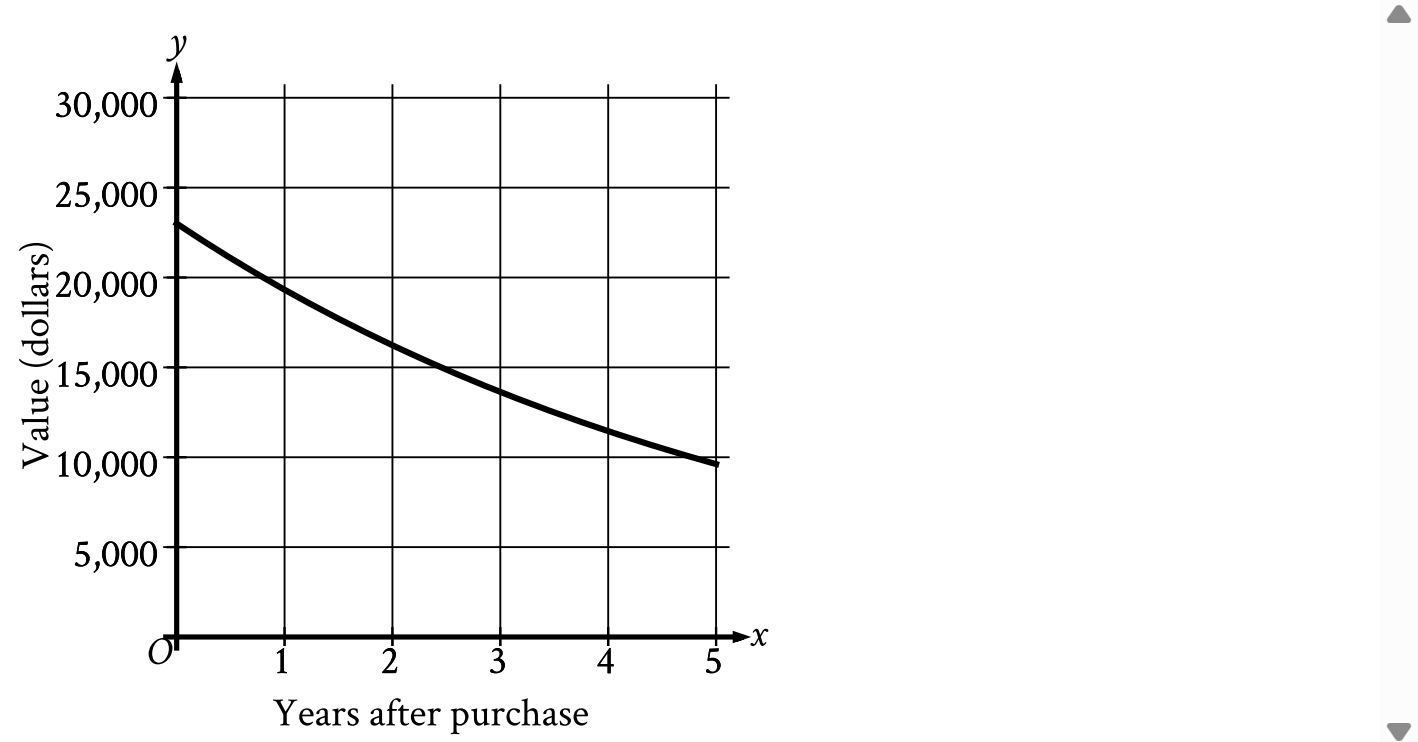
The graph of the exponential function f is shown, where $y = f(x)$. The y -intercept of the graph is $(0, y)$. What is the value of y ?

Question ID ba5a8050

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: ba5a8050

The graph shows the predicted value y , in dollars, of a certain sport utility vehicle x years after it is first purchased.



Which of the following is closest to the predicted value of the sport utility vehicle **3** years after it is first purchased?

- A. \$9,619
- B. \$13,632
- C. \$19,320
- D. \$23,000

Question ID e2abeaa7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: e2abeaa7

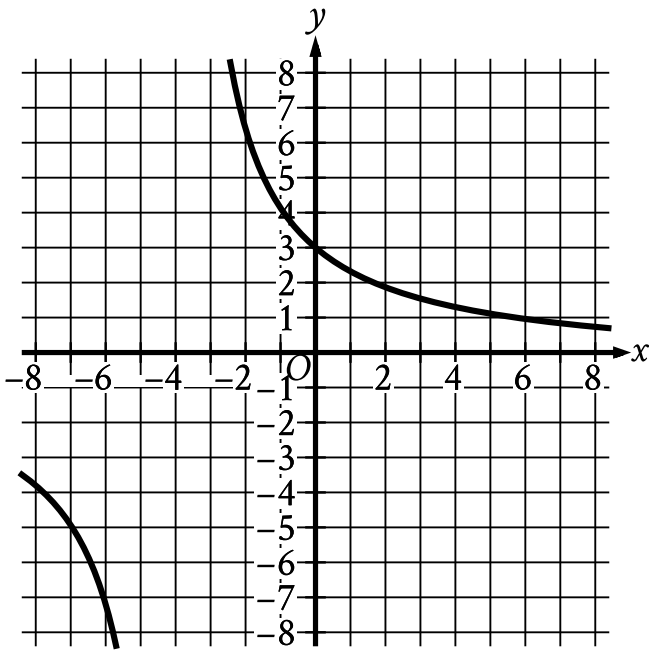
The function f is defined by $f(x) = x^3 + 9$. What is the value of $f(2)$?

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

Question ID 506336f9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 506336f9



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 $f(0)$?

Question ID dabcd1a8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: dabcd1a8

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

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.

Question ID c3018583

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: c3018583

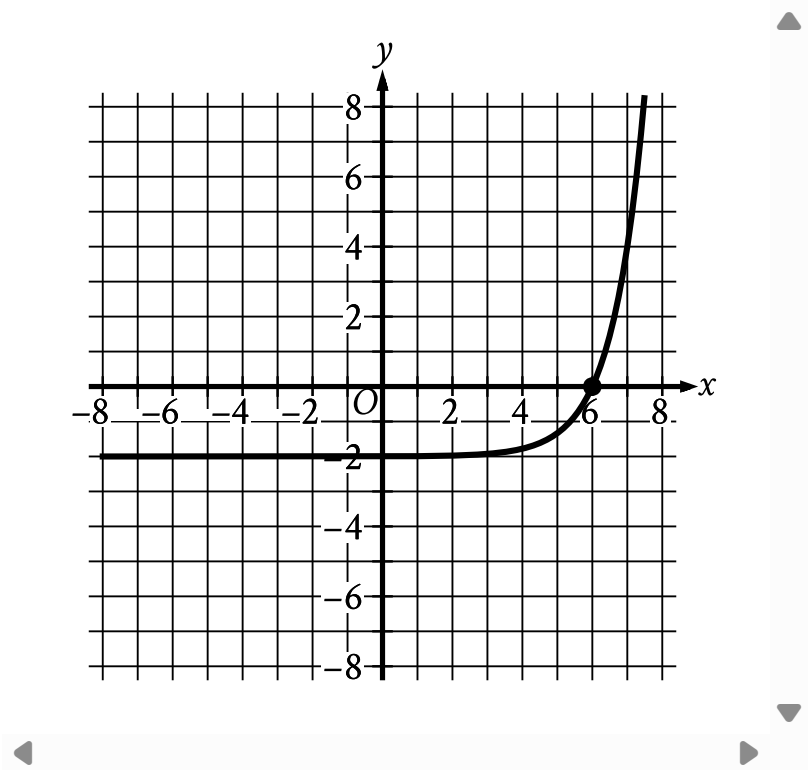
A ball is dropped from an initial height of **22** feet and bounces off the ground repeatedly. The function ***h*** estimates that the maximum height reached after each time the ball hits the ground is **85%** of the maximum height reached after the previous time the ball hit the ground. Which equation defines ***h***, where ***h*(*n*)** is the estimated maximum height of the ball after it has hit the ground ***n*** times and ***n*** is a whole number greater than **1** and less than **10**?

- A. $h(n) = 22(0.22)^n$
- B. $h(n) = 22(0.85)^n$
- C. $h(n) = 85(0.22)^n$
- D. $h(n) = 85(0.85)^n$

Question ID 71dfd66d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 71dfd66d



What is the x-coordinate of the x-intercept of the graph shown?

Question ID 32f0047f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 32f0047f

$$P(t) = 24.8(1.036)^t$$

The function P gives the predicted population, in millions, of a certain country for the period from 1984 to 2018, where t is the number of years after 1984. According to the model, what is the best interpretation of the statement “ $P(8)$ is approximately equal to 32.91”?

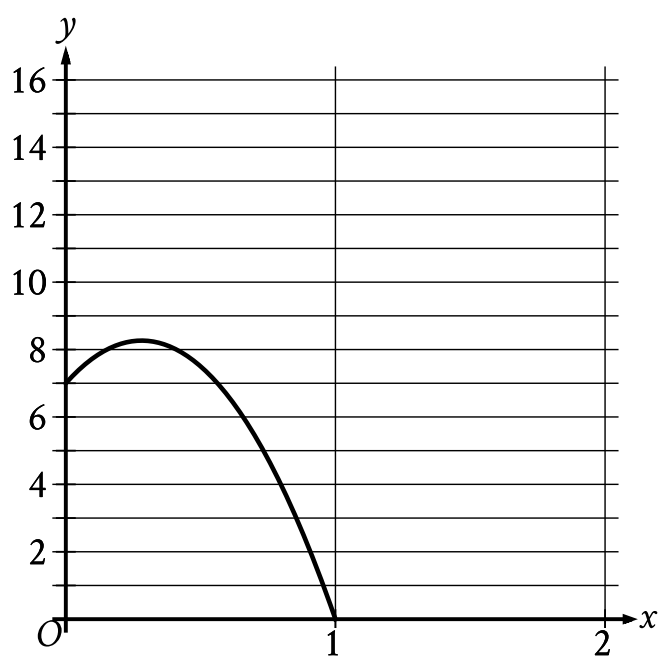
- A. In 1984, the predicted population of this country was approximately 8 million.
- B. In 1984, the predicted population of this country was approximately 32.91 million.
- C. 8 years after 1984, the predicted population of this country was approximately 32.91 million.
- D. 32.91 years after 1984, the predicted population of this country was approximately 8 million.

Question ID 5a0d5e4b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

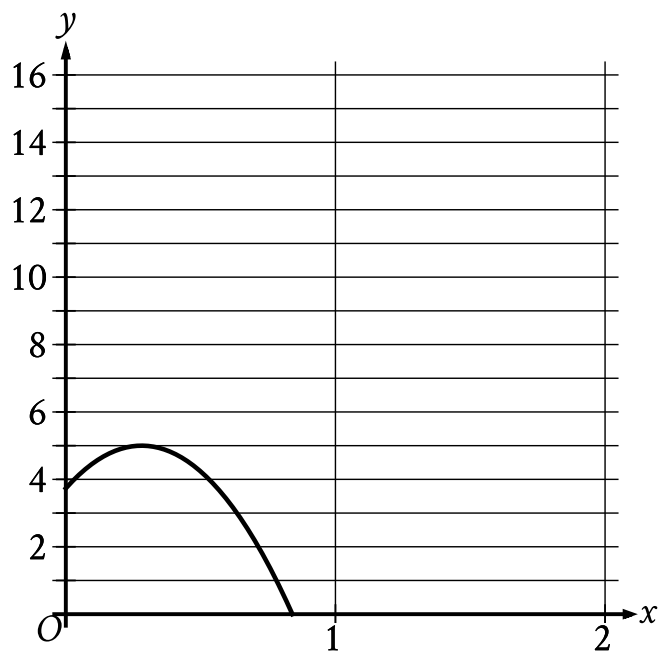
ID: 5a0d5e4b

During the first part of an experiment, a ball was launched from a 7-foot-tall platform. The graph shows the height y , in feet, of the ball x seconds after it was launched during the first part of the experiment.

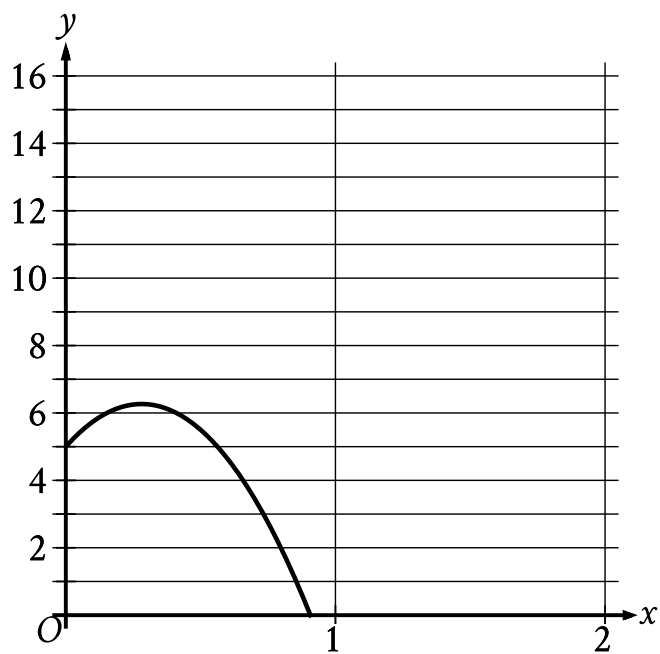


During the second part of the experiment, the ball was launched the same way, but from a platform that is 2 feet shorter than the first platform. Which of the following graphs could represent the height y , in feet, of the ball x seconds after it was launched during the second part of the experiment?

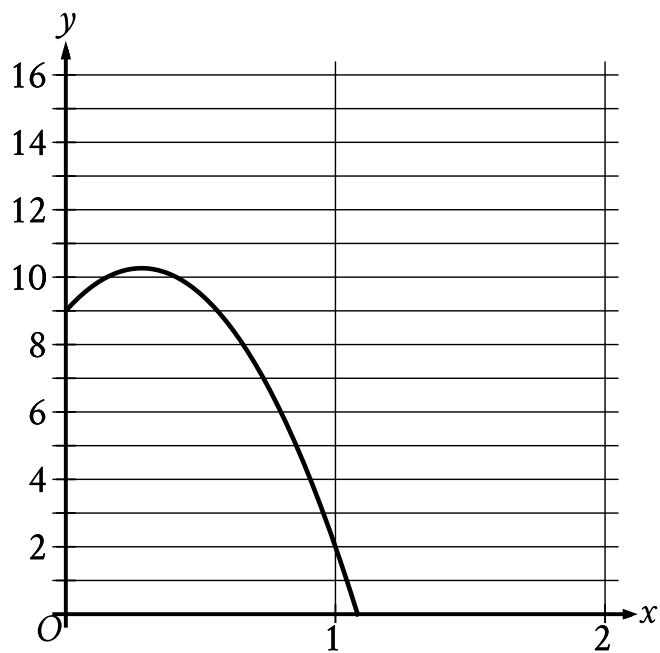
A.



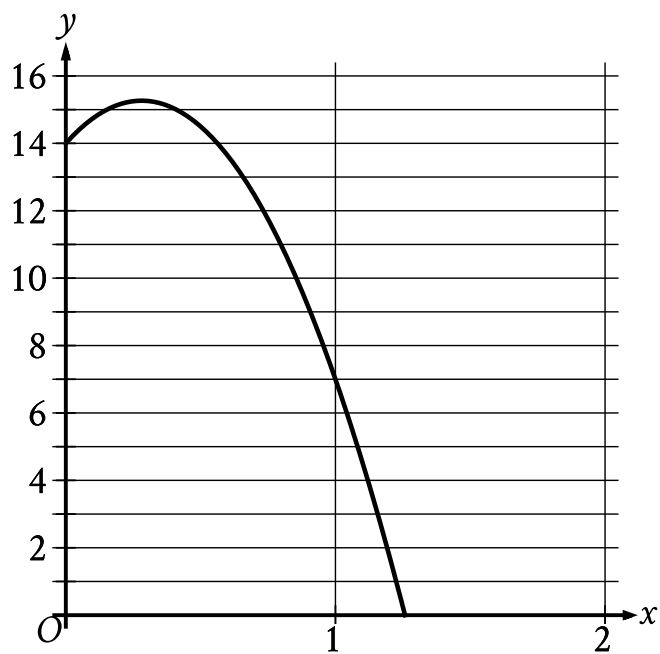
B.



C.



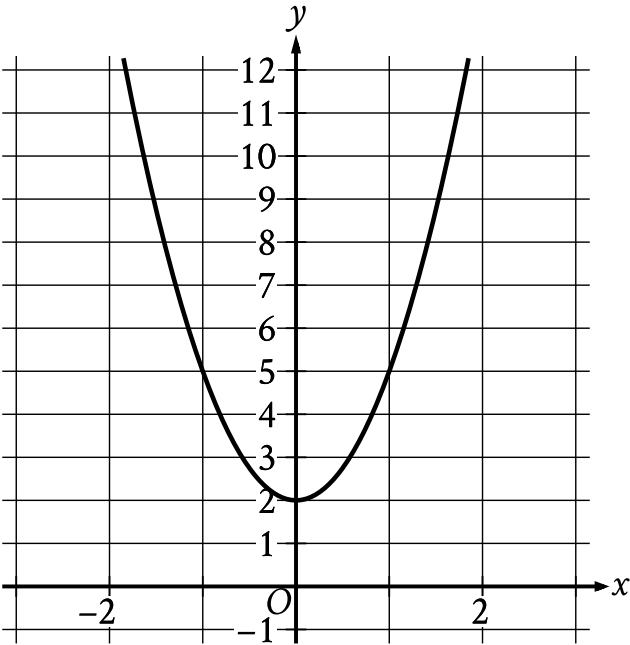
D.



Question ID 0b95a3c1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 0b95a3c1



The graph of the quadratic function $y = f(x)$ is shown. What is the vertex of the graph?

- A. $(0, -2)$
- B. $(0, -3)$
- C. $(0, 2)$
- D. $(0, 3)$

Question ID e00137af

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: e00137af

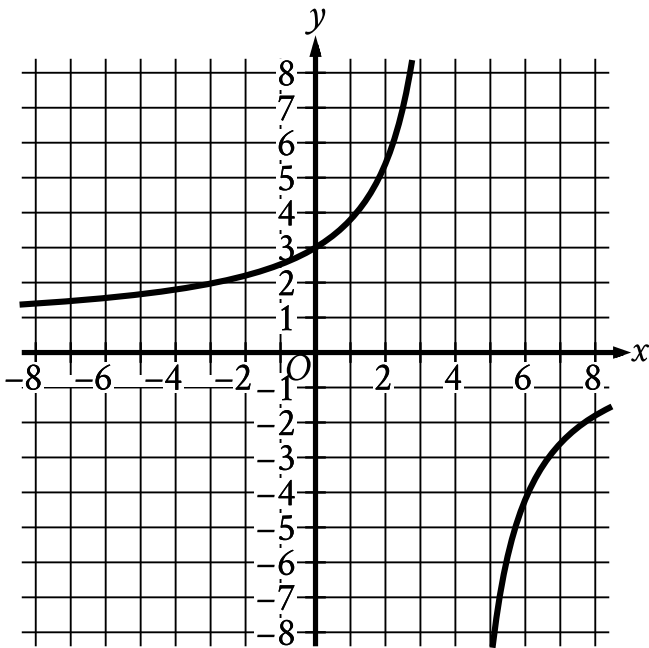
The function g is defined by $g(x) = x^2 + 9$. For which value of x is $g(x) = 25$?

- A. 4
- B. 5
- C. 9
- D. 13

Question ID 7f26b325

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 7f26b325



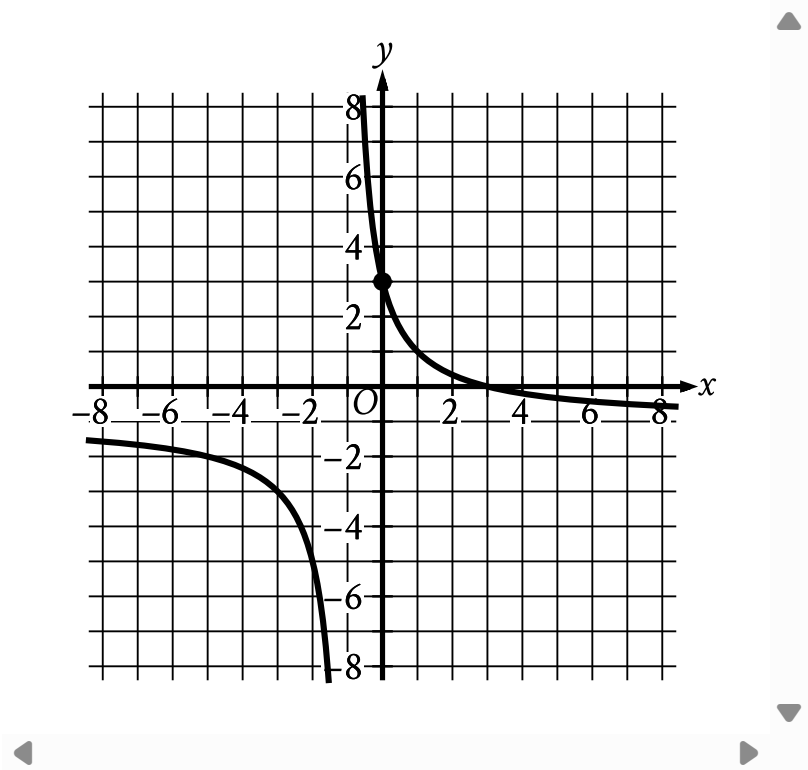
The graph of $y = f(x)$ is shown in the xy -plane. What is the value of $f(0)$?

- A. -3
- B. 0
- C. $\frac{3}{5}$
- D. 3

Question ID 49f6315b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 49f6315b



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

Question ID 14a9a45d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 14a9a45d

The function f is defined by $f(x) = \frac{1}{6x}$. What is the value of $f(x)$ when $x = 3$?

- A. $\frac{1}{3}$
- B. $\frac{1}{6}$
- C. $\frac{1}{9}$
- D. $\frac{1}{18}$

Question ID 74b8e0a0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 74b8e0a0

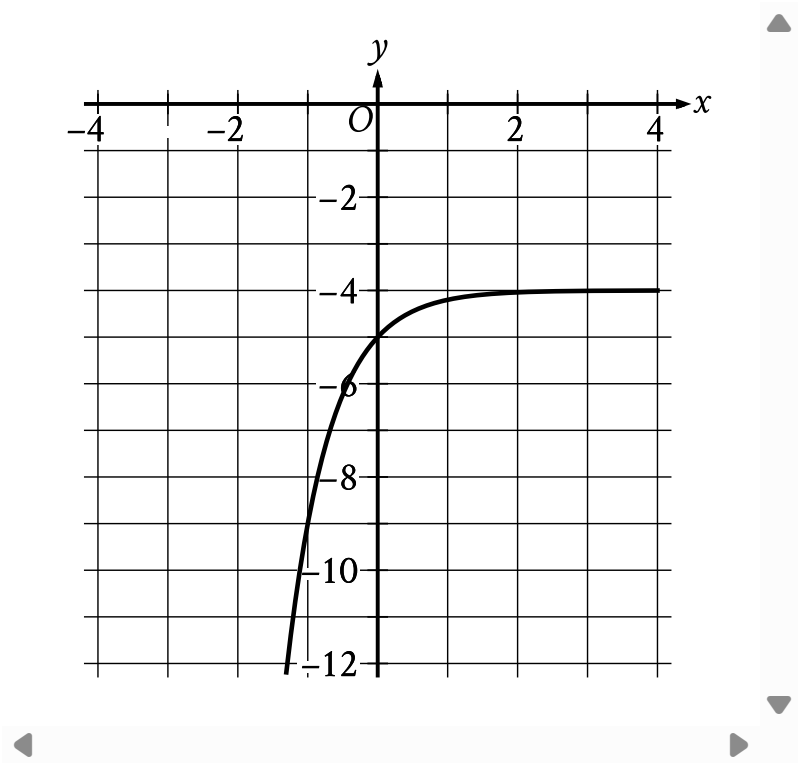
The function f is defined by $f(x) = \frac{16}{x}$. What is the value of $f(x)$ when $x = 17$?

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

Question ID 9322d5de

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 9322d5de



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

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

Question ID bb4474ea

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: bb4474ea

The function f is defined by $f(x) = 10x^2 - 32x - 152$. What is the value of $f(0)$?

- A. -152
- B. -32
- C. 0
- D. 10

Question ID 5964ec17

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

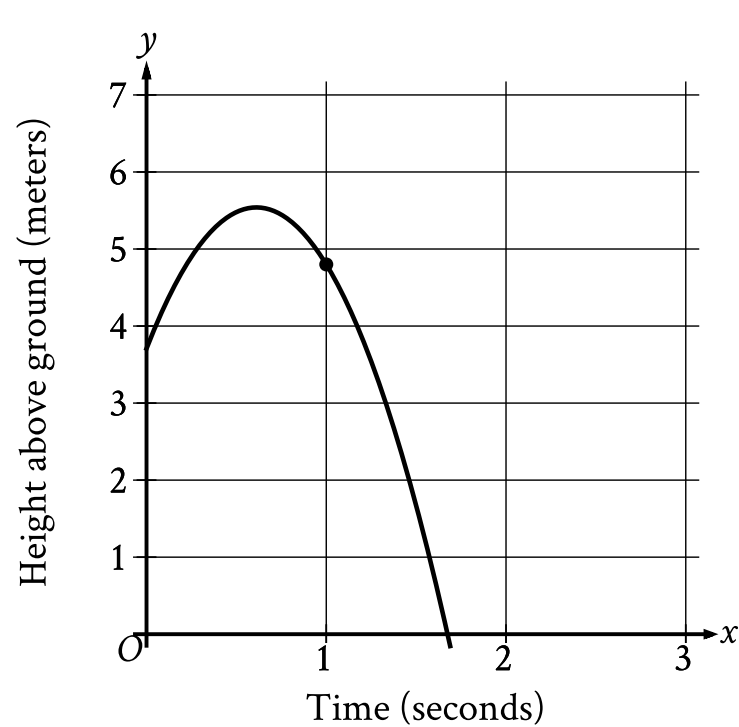
ID: 5964ec17

The function f is defined by $f(x) = x^2 + x + 71$. What is the value of $f(2)$?

Question ID 67906a7c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 67906a7c



The graph shows the height above ground, in meters, of a ball x seconds after the ball was launched upward from a platform. Which statement is the best interpretation of the marked point $(1.0, 4.8)$ in this context?

- A. 1.0 second after being launched, the ball's height above ground is 4.8 meters.
- B. 4.8 seconds after being launched, the ball's height above ground is 1.0 meter.
- C. The ball was launched from an initial height of 1.0 meter with an initial velocity of 4.8 meters per second.
- D. The ball was launched from an initial height of 4.8 meters with an initial velocity of 1.0 meter per second.

Question ID 76bb62a9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 76bb62a9

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

Question ID ec6f1063

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: ec6f1063

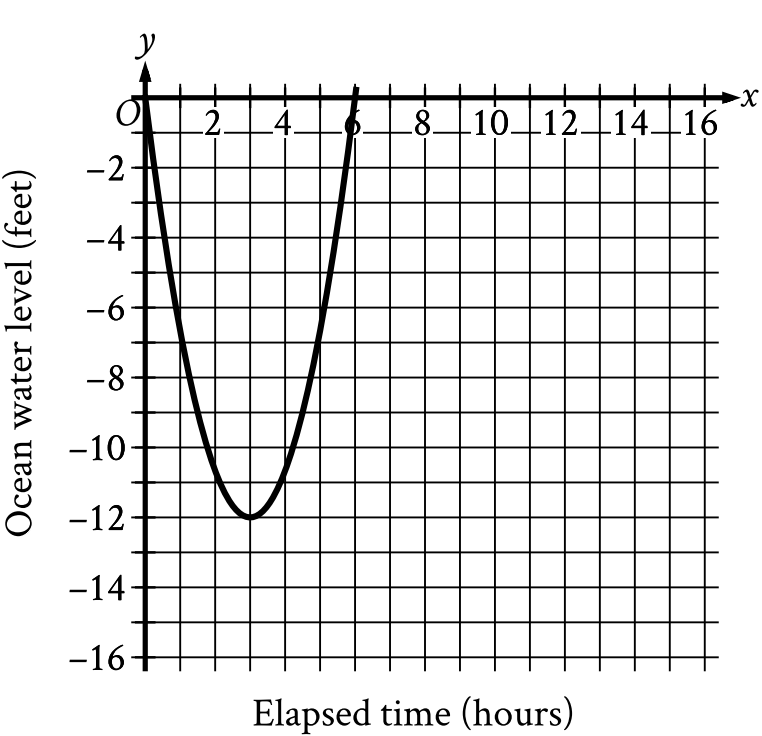
The function g is defined by $g(x) = \sqrt{8x + 1}$. What is the value of $g(3)$?

- A. $\frac{5}{8}$
- B. $\frac{25}{8}$
- C. 5
- D. 25

Question ID 1bb4e088

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 1bb4e088



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

B.

x	y
0	0
3	12
0	-6

C.

x	y
0	0
3	-12
6	0

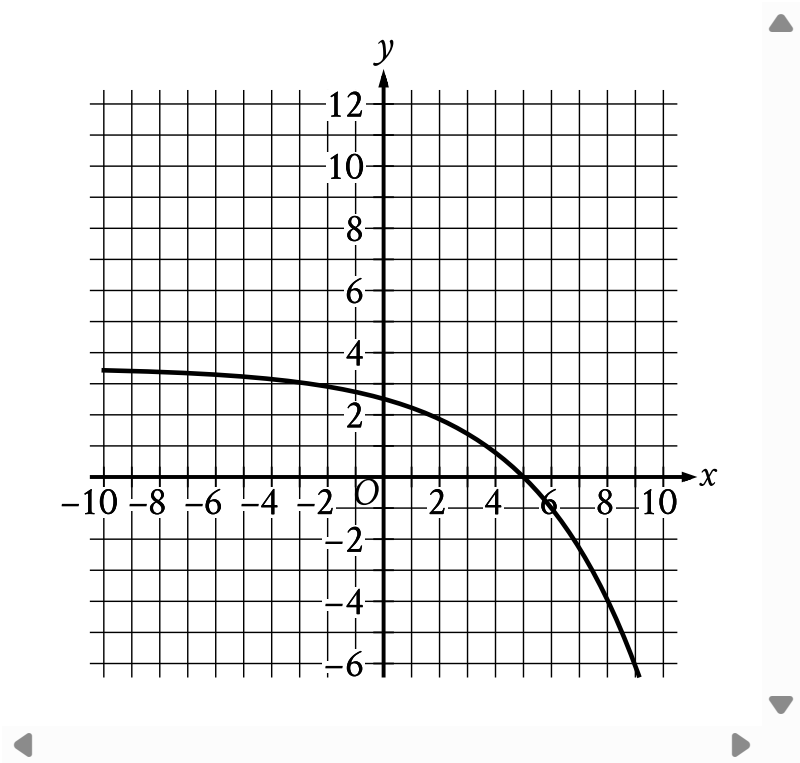
D.

x	y
0	0
12	3
-6	0

Question ID f89a2cb0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: f89a2cb0



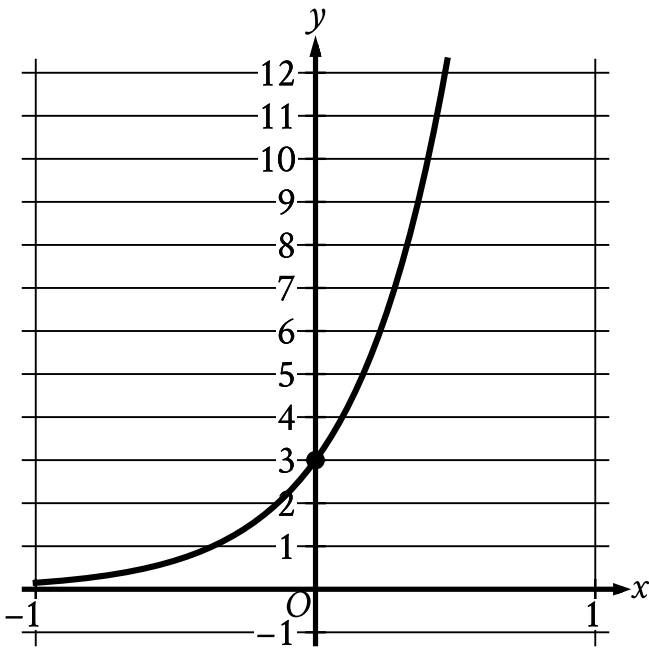
What is the x-intercept of the graph shown?

- A. $(-5, 0)$
- B. $(5, 0)$
- C. $(-2, 0)$
- D. $(2, 0)$

Question ID 066299f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 066299f1



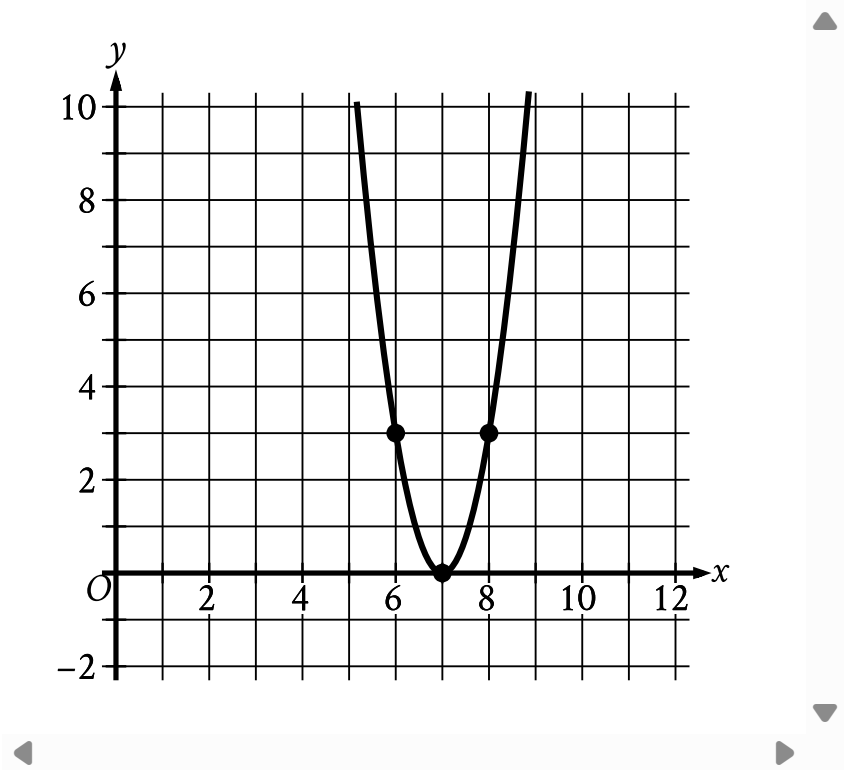
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The graph of the exponential function f is shown, where $y = f(x)$. The y -intercept of the graph is $(0, y)$. What is the value of y ?

Question ID afa732b9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: afa732b9

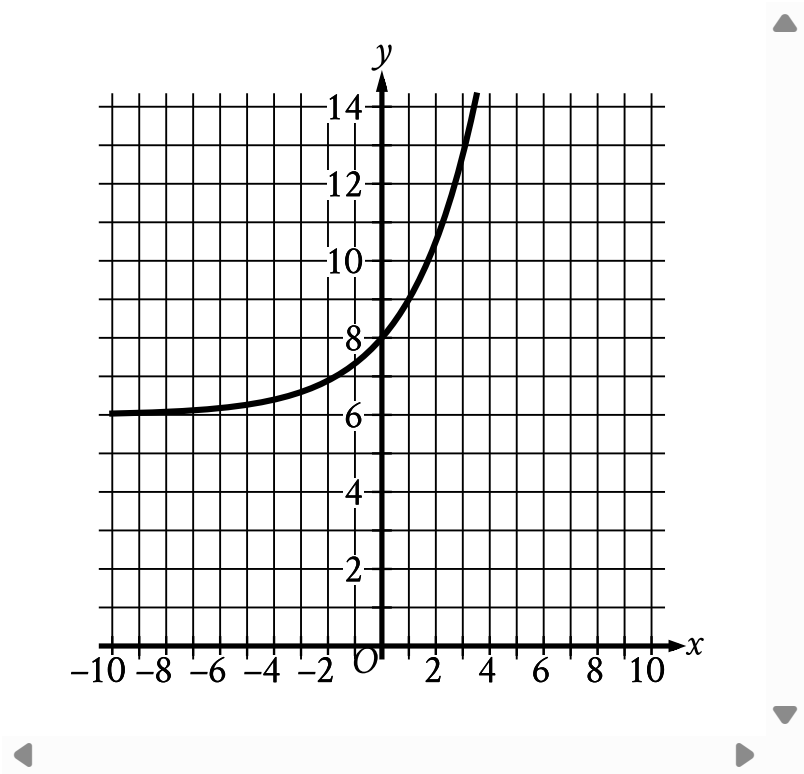


The x-intercept of the graph shown is $(x, 0)$. What is the value of x ?

Question ID f8879c84

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: f8879c84



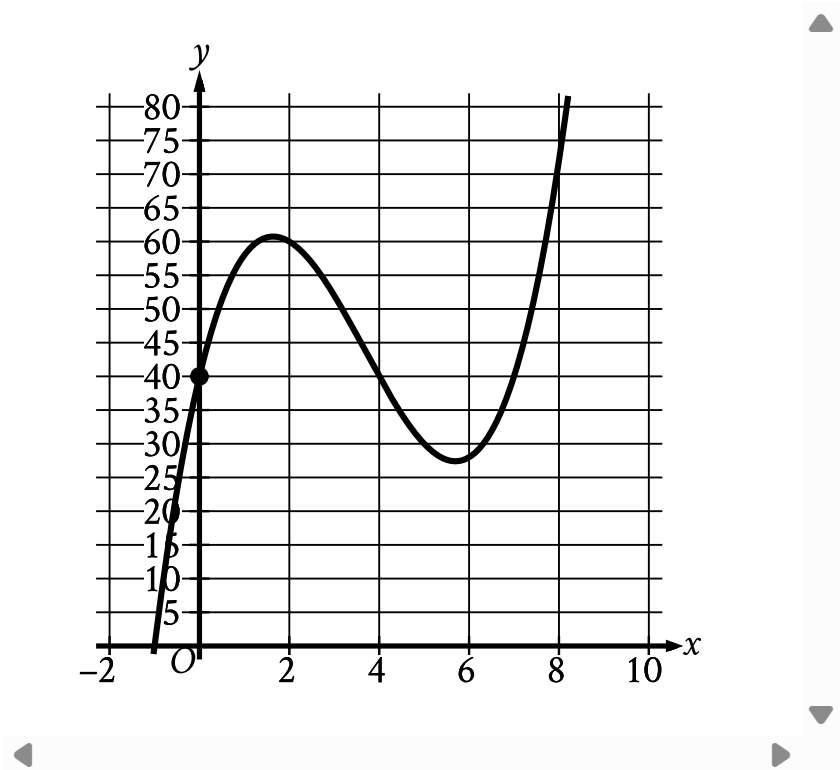
What is the y-intercept of the graph shown?

- A. $(-8, 0)$
- B. $(-6, 0)$
- C. $(0, 6)$
- D. $(0, 8)$

Question ID ff31d6d6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: ff31d6d6



The y -intercept of the graph shown is (x, y) . What is the value of y ?

Question ID a2786d4b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: a2786d4b

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

Question ID 07173576

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 07173576

The function h is defined by $h(x) = \frac{8}{5x+6}$. What is the value of $h(2)$?

Question ID d25b0c19

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: d25b0c19

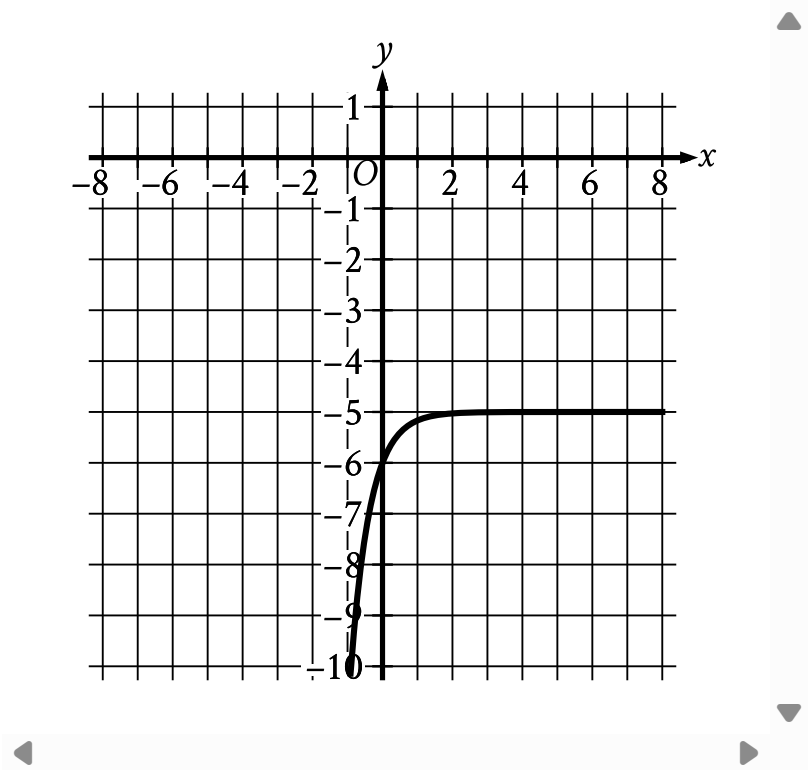
The function f is defined by $f(x) = x^3 + 15$. What is the value of $f(2)$?

- A. 20
- B. 21
- C. 23
- D. 24

Question ID f4d12865

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: f4d12865



What is the y-intercept of the graph shown?

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

Question ID 8a3fa8c4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 8a3fa8c4

The kinetic energy, in joules, of an object with mass **9** kilograms traveling at a speed of v meters per second is given by the function K , where $K(v) = \frac{9}{2}v^2$. Which of the following is the best interpretation of $K(34) = 5,202$ in this context?

- A. The object traveling at **34** meters per second has a kinetic energy of **5,202** joules.
- B. The object traveling at **340** meters per second has a kinetic energy of **5,202** joules.
- C. The object traveling at **5,202** meters per second has a kinetic energy of **34** joules.
- D. The object traveling at **23,409** meters per second has a kinetic energy of **34** joules.

Question ID fb559c97

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: fb559c97

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.

Question ID cbfcd000

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

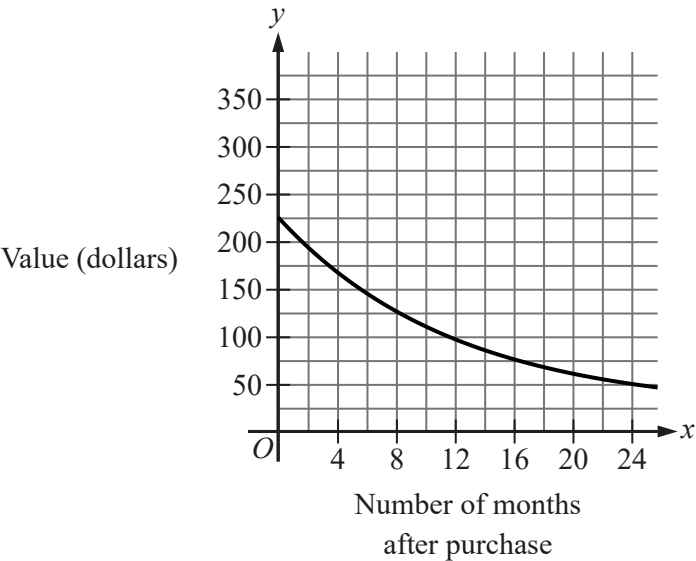
ID: cbfcd000

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

Question ID 74e3e032

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 74e3e032



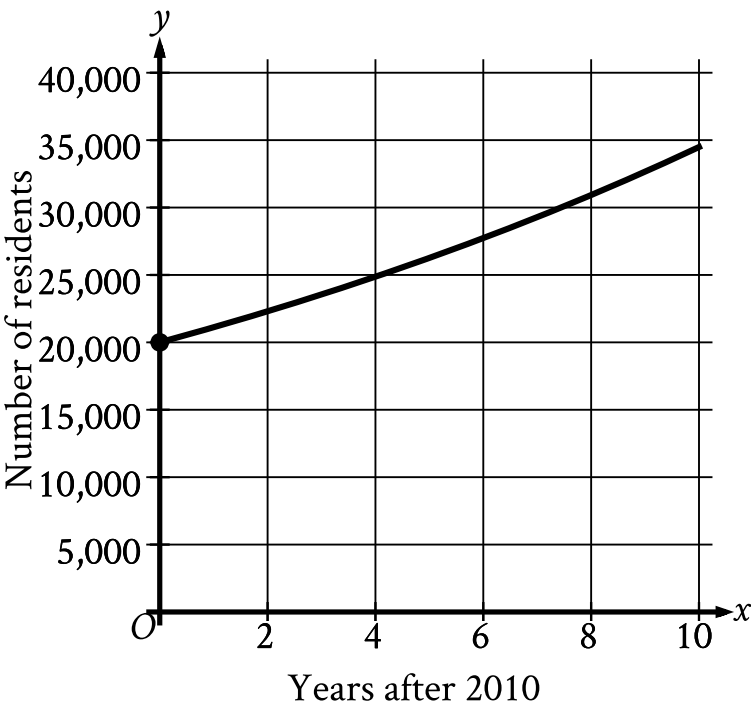
The graph shown gives the estimated value, in dollars, of a tablet as a function of the number of months since it was purchased. What is the best interpretation of the y-intercept of the graph in this context?

- A. The estimated value of the tablet was **\$225** when it was purchased.
- B. The estimated value of the tablet **24** months after it was purchased was **\$225**.
- C. The estimated value of the tablet had decreased by **\$225** in the **24** months after it was purchased.
- D. The estimated value of the tablet decreased by approximately **2.25%** each year after it was purchased.

Question ID 0ad45980

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 0ad45980



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

Question ID f8a41cc8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: f8a41cc8

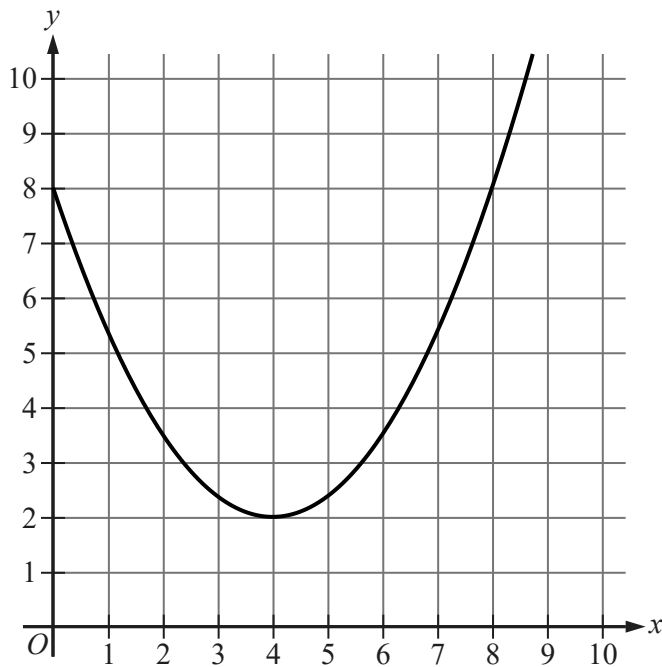
At the time of posting a video, a social media channel had **53** subscribers. Each day for five days after the video was posted, the number of subscribers doubled from the number the previous day. Which equation gives the total number of subscribers, n , to the channel d days after the video was posted?

- A. $n = (53)^d$
- B. $n = 53(2)^d$
- C. $n = 53\left(\frac{1}{2}\right)^d$
- D. $n = (53)^2 + d$

Question ID d6b10177

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: d6b10177



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.

Question ID 5ba6bd07

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 5ba6bd07

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

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

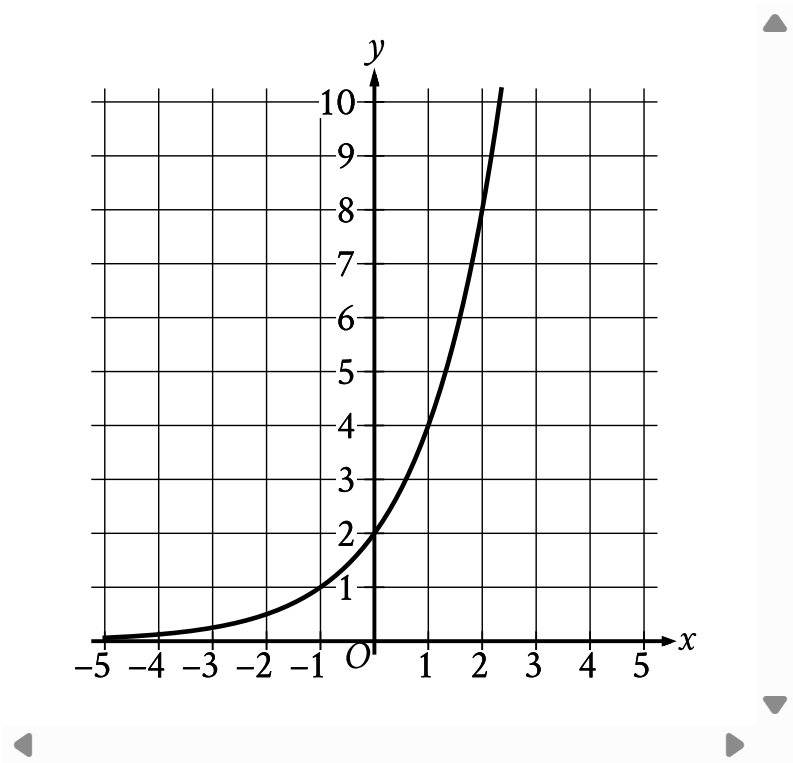
D.

x	1	2	3
$h(x)$	-2	1	3

Question ID 4f5ff634

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 4f5ff634



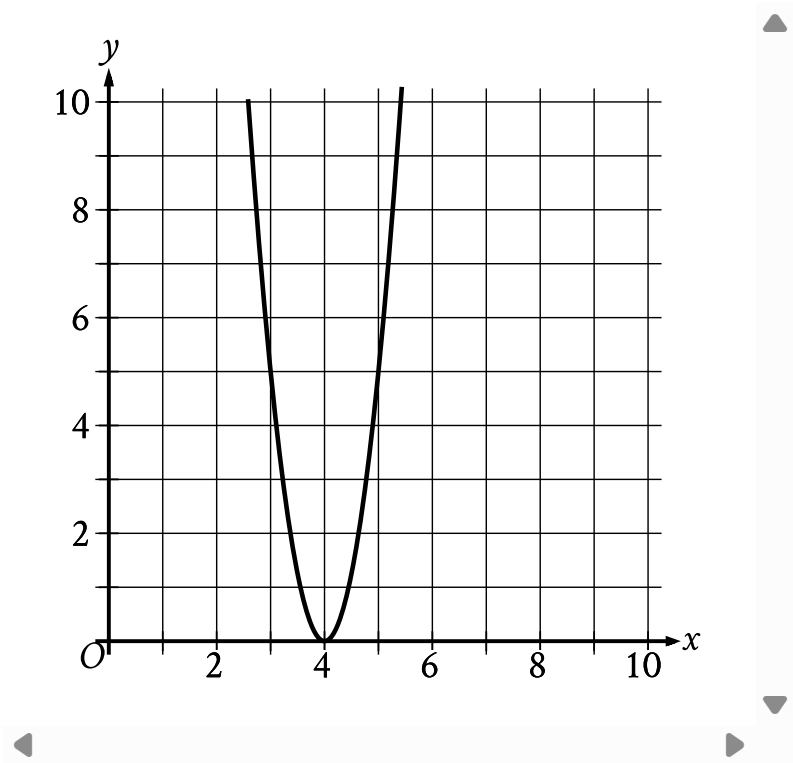
What is the y-intercept of the graph shown?

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

Question ID f4006172

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: f4006172



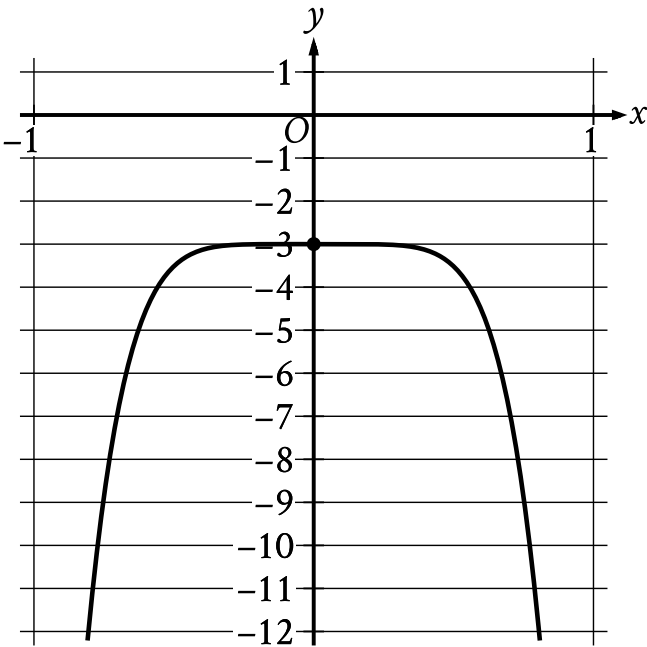
What is the x-intercept of the graph shown?

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

Question ID 089483cd

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: 089483cd



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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 ?

Question ID a4ac7f91

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: a4ac7f91

The function f is defined by $f(x) = 8\sqrt{x}$. For what value of x does $f(x) = 48$?

- A. 6
- B. 8
- C. 36
- D. 64

Question ID b5b477cb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: b5b477cb

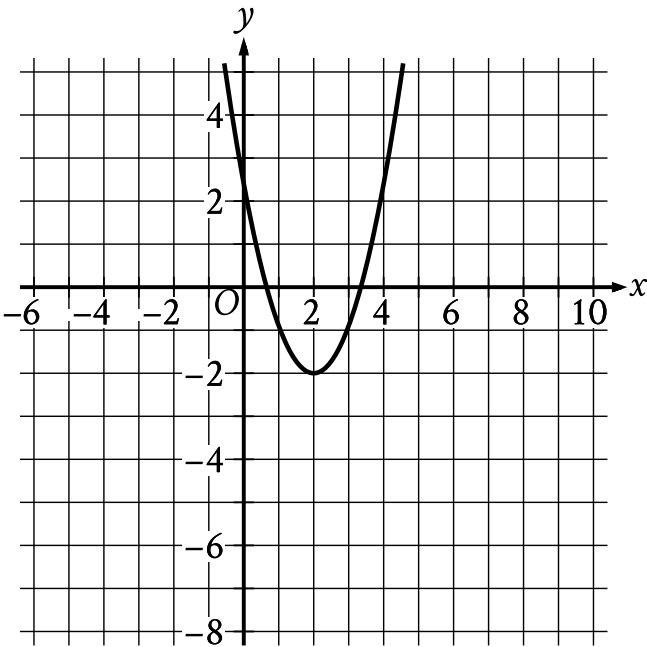
An investment account was opened with an initial value of \$890. The value of the account doubled every 10 years. Which equation represents the value of the account $M(t)$, in dollars, t years after the account was opened?

- A. $M(t) = 890\left(\frac{1}{2}\right)^{\frac{t}{10}}$
- B. $M(t) = 890\left(\frac{1}{10}\right)^{\frac{t}{2}}$
- C. $M(t) = 890(2)^{\frac{t}{10}}$
- D. $M(t) = 890(10)^{\frac{t}{2}}$

Question ID f163697b

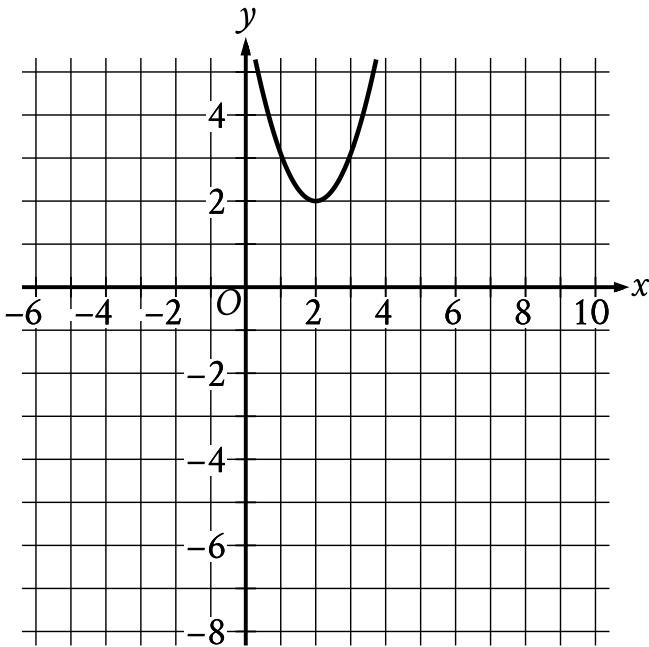
Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: f163697b

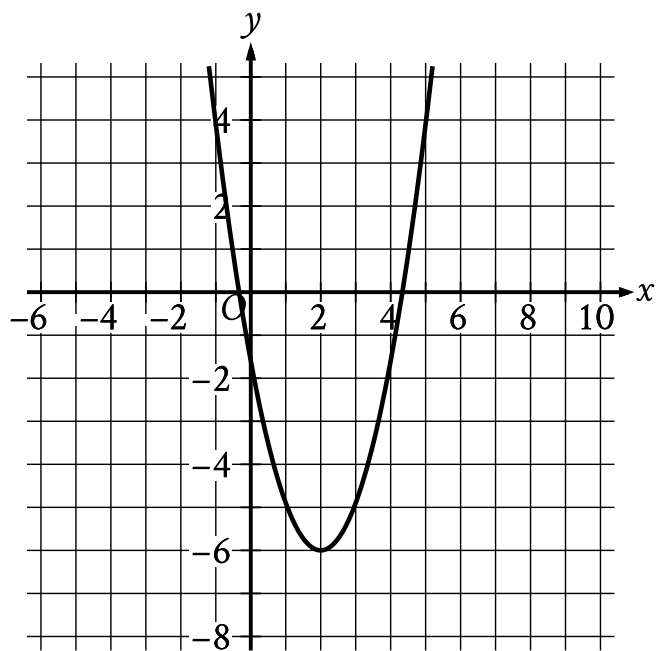


The graph shown will be translated up 4 units. Which of the following will be the resulting graph?

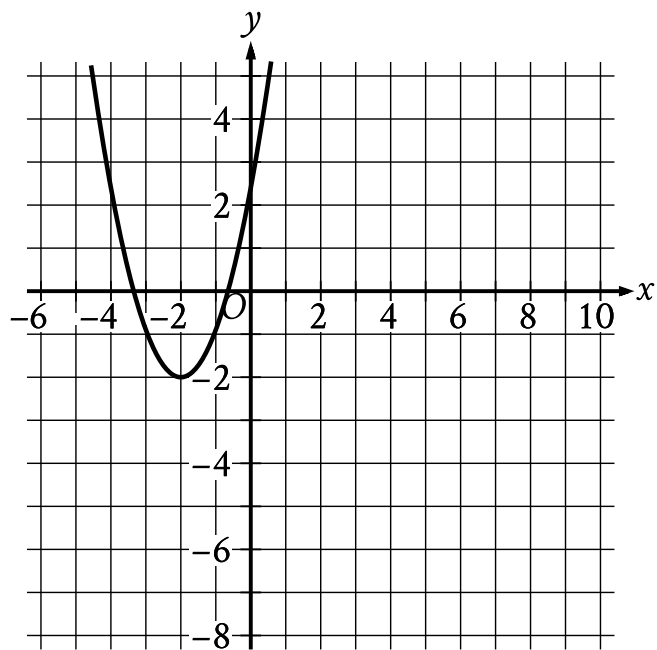
A.



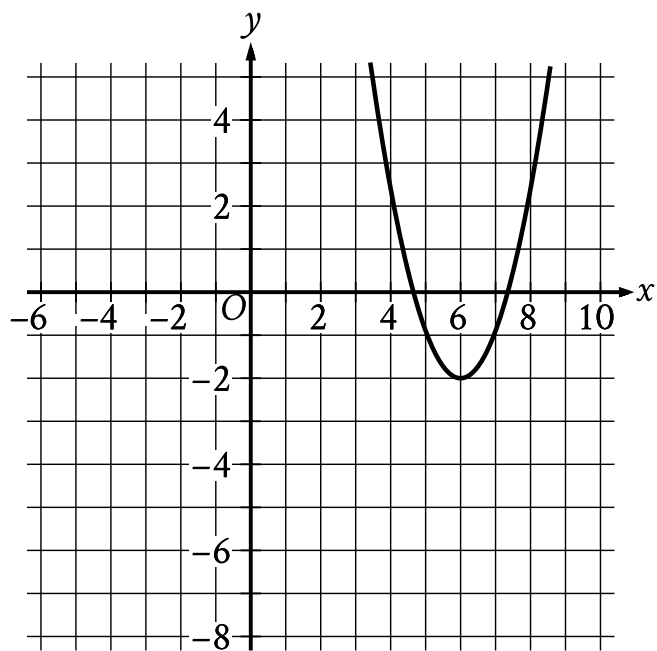
B.



C.



D.



Question ID e577d895

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: e577d895

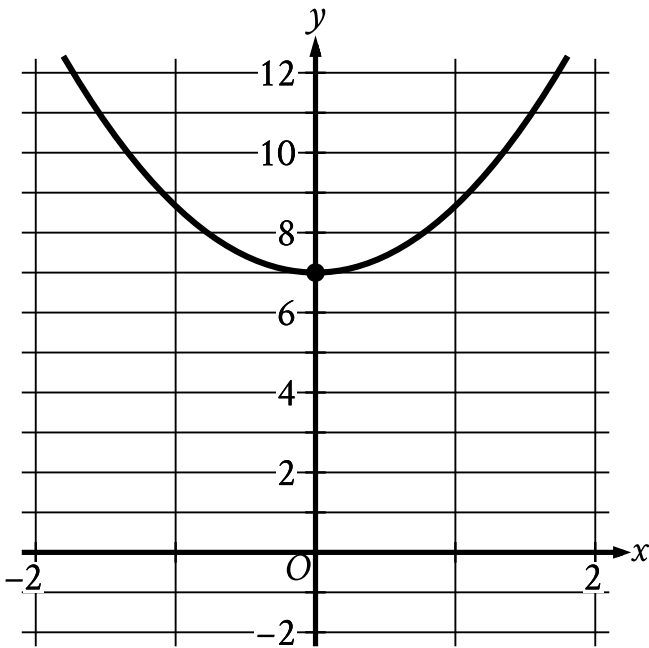
The function $f(x) = 200,000(1.21)^x$ gives a company’s predicted annual revenue, in dollars, x years after the company started selling light bulbs online, where $0 < x \leq 10$. What is the best interpretation of the statement “ $f(5)$ is approximately equal to 518,748” in this context?

- 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.

Question ID df0ef976

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	Easy

ID: df0ef976



The parabola shown intersects the y -axis at the point (x, y) . What is the value of y ?