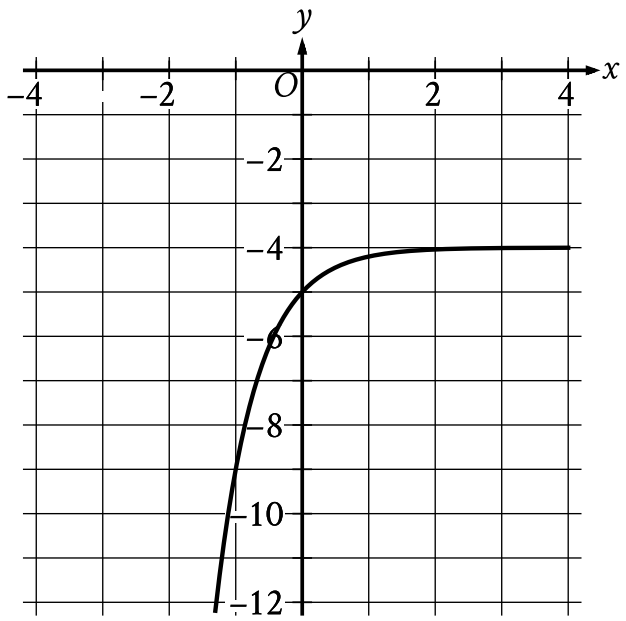
Question ID 6abec9a8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 6abec9a8

1.1



What is the y-intercept of the graph shown?

A. $(-1, -9)$

B. $(0, -5)$

C. $(0, -4)$

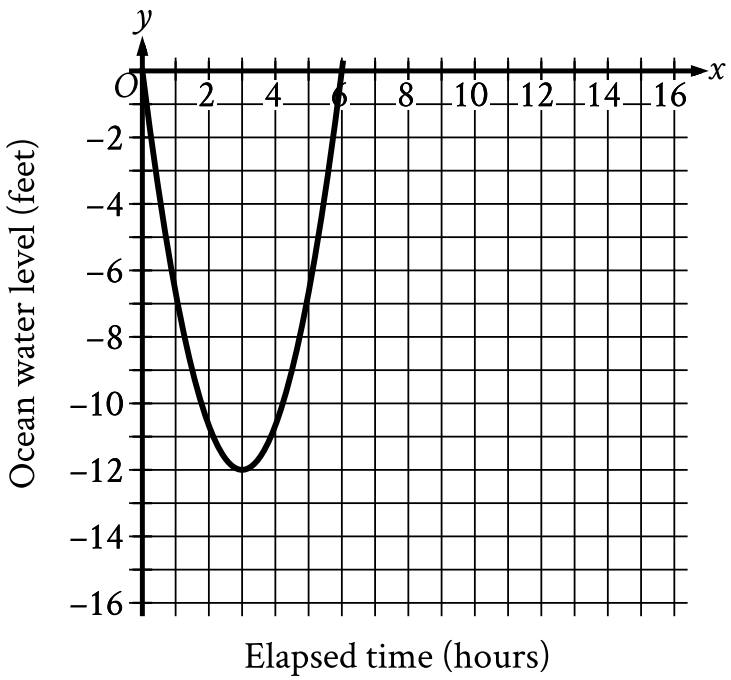
D. $(0, 0)$

Question ID 1ee962ec

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 1ee962ec

1.2



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 788bfd56

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 788bfd56

1.3

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 b39d74a0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

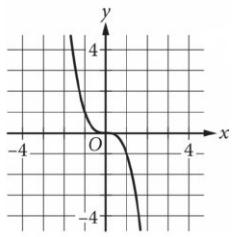
ID: b39d74a0

1.4

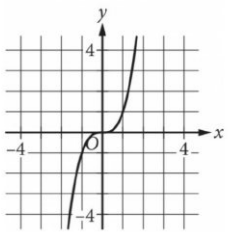
x	y
0	0
1	1
2	8
3	27

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 ?

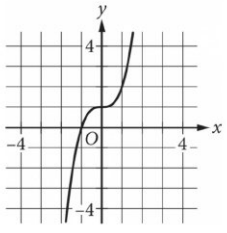
A.



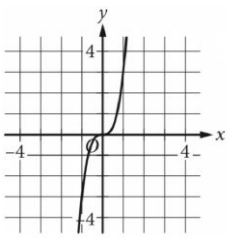
B.



C.



D.



Question ID 5377d9cf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 5377d9cf

1.5

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

what is $f(-1)$?

A. –5

B. –2

C. 2

D. 5

Question ID 75915e3c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 75915e3c

1.6

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

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

A. 9

B. 12

C. 18

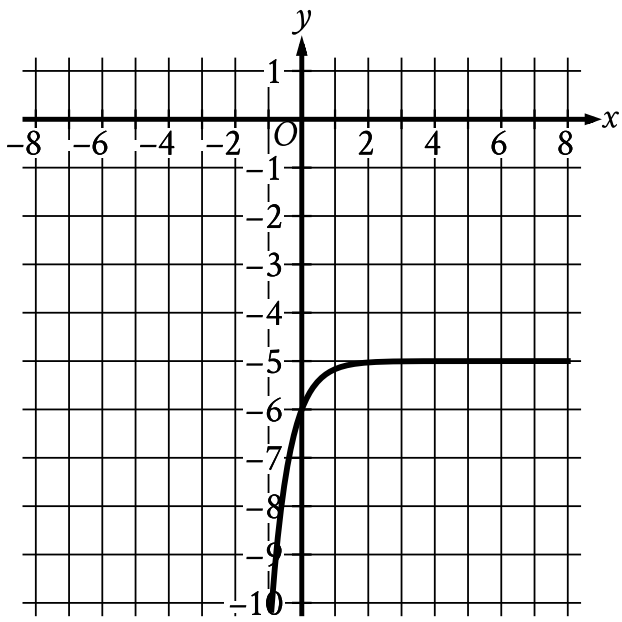
D. 36

Question ID 7160cbb3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 7160cbb3

1.7



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

A. $(0, -6)$

B. $(-6, 0)$

C. $(0, 0)$

D. $(-5, -5)$

Question ID 72ae8a87

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 72ae8a87

1.8

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 09f58996

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 09f58996

1.9

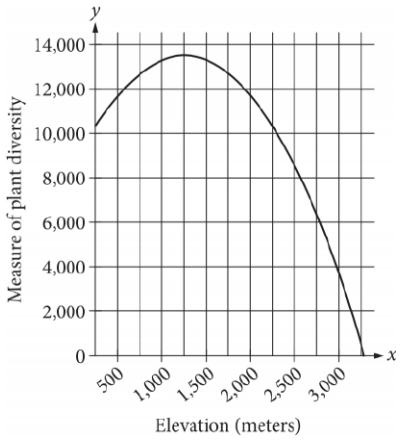
The function f is defined by $f(x) = 6 + \sqrt{x}$. What is the value of $f(36)$?

Question ID ebe4bde0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: ebe4bde0

1.10



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

Question ID d46da42c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

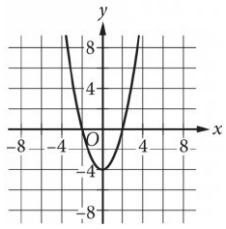
ID: d46da42c

1.11

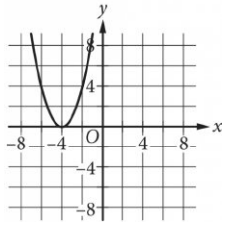
$f(x) = x^2 + 4$

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

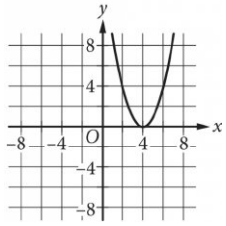
A.



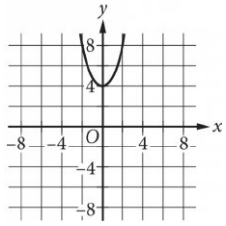
B.



C.



D.



Question ID 79ba511a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 79ba511a

1.12

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

A. 20

B. 21

C. 23

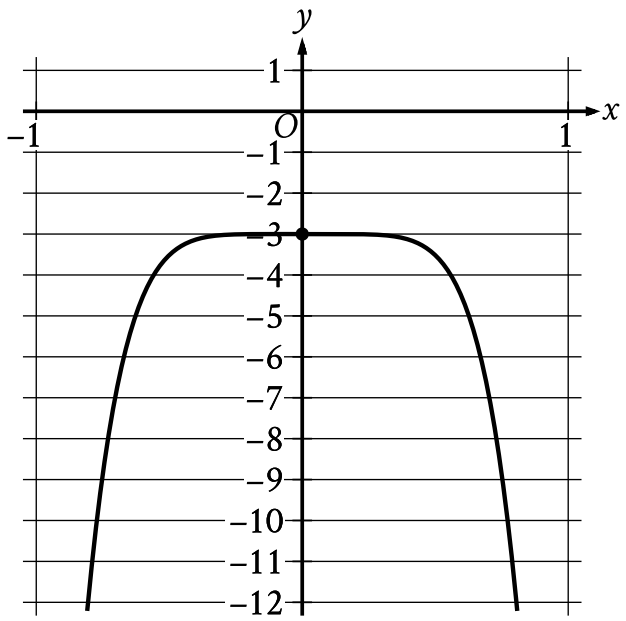
D. 24

Question ID 50418728

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 50418728

1.13



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 ee05c84e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: ee05c84e

1.14

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

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

A. 250

B. 500

C. 750

D. 2,000

Question ID 39652e93

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 39652e93

1.15

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

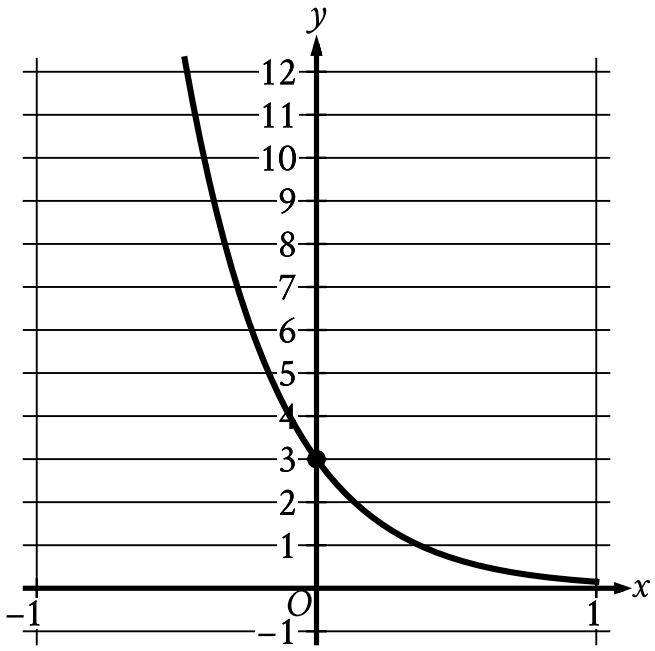
D. 17

Question ID 02c67921

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 02c67921

1.16



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 04b985e6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 04b985e6

1.17

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 1863e3be

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 1863e3be

1.18

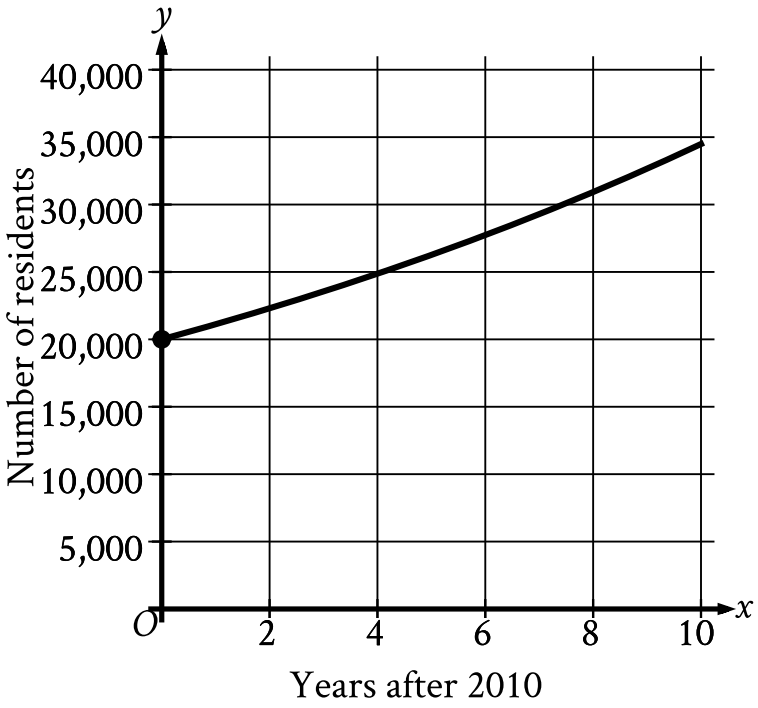
The y-intercept of the graph of $y = x^2 + 31$ in the *xy*-plane is $(0, y)$. What is the value of y?

Question ID 2d394c28

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 2d394c28

1.19



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 2fec8bf4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Nonlinear functions	■□□

ID: 2fec8bf4

1.20

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

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.