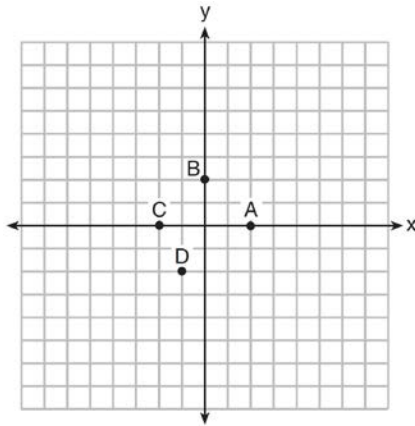


F.IF.A.2: Functional Notation 1

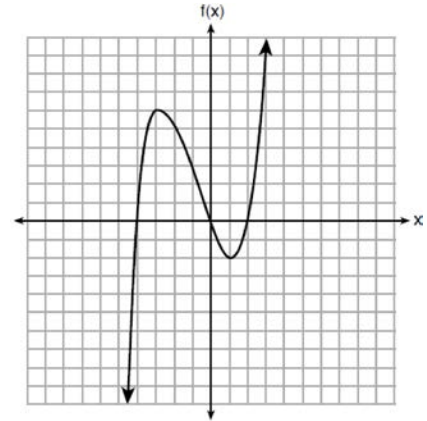
1 The graph of $y = f(x)$ is shown below.



Which point could be used to find $f(2)$?

- 1) *A*
- 2) *B*
- 3) *C*
- 4) *D*

2 The graph of $f(x)$ is shown below.



What is the value of $f(-3)$?

- 1) 6
- 2) 2
- 3) -2
- 4) -4

3 If $f(x) = 4x + 5$, what is the value of $f(-3)$?

- 1) -2
- 2) -7
- 3) 17
- 4) 4

4 If $f(x) = \frac{3x + 4}{2}$, then $f(8)$ is

- 1) 21
- 2) 16
- 3) 14
- 4) 4

5 Given $f(x) = -3x^2 + 10$, what is the value of $f(-2)$?

- 1) -26
- 2) -2
- 3) 22
- 4) 46

6 The function $g(x)$ is defined as $g(x) = -2x^2 + 3x$. The value of $g(-3)$ is

- 1) -27
- 2) -9
- 3) 27
- 4) 45

7 If $g(x) = -x^2 - x + 5$, then $g(-4)$ is equal to

- 1) -15
- 2) -7
- 3) 17
- 4) 25

8 A function is defined as $K(x) = 2x^2 - 5x + 3$. The value of $K(-3)$ is

- 1) 54
- 2) 36
- 3) 0
- 4) -18

9 If $f(x) = \frac{1}{2}x^2 - \left(\frac{1}{4}x + 3\right)$, what is the value of $f(8)$?

- 1) 11
- 2) 17
- 3) 27
- 4) 33

10 If $k(x) = 2x^2 - 3\sqrt{x}$, then $k(9)$ is

- 1) 315
- 2) 307
- 3) 159
- 4) 153

11 If $f(x) = 2(3^x) + 1$, what is the value of $f(2)$?

- 1) 13
- 2) 19
- 3) 37
- 4) 54

12 If $f(x) = \frac{\sqrt{2x+3}}{6x-5}$, then $f\left(\frac{1}{2}\right) =$

- 1) 1
- 2) -2
- 3) -1
- 4) $-\frac{13}{3}$

13 If $f(x) = x^2 + 2x + 1$ and $g(x) = 3x + 5$, then what is the value of $f(1) - g(3)$?

- 1) 10
- 2) 8
- 3) -10
- 4) -8

14 Given $f(x) = 3x - 5$, which statement is true?

- 1) $f(0) = 0$
- 2) $f(3) = 4$
- 3) $f(4) = 3$
- 4) $f(5) = 0$

- 15 If $f(n) = (n - 1)^2 + 3n$, which statement is true?
- 1) $f(3) = -2$
 - 2) $f(-2) = 3$
 - 3) $f(-2) = -15$
 - 4) $f(-15) = -2$

- 16 If $f(x) = x^2 + 3x$, then which statement is true?
- 1) $f(1) = f(-1)$
 - 2) $f(2) = f(-2)$
 - 3) $f(1) = f(2)$
 - 4) $f(-1) = f(-2)$

- 17 Lynn, Jude, and Anne were given the function $f(x) = -2x^2 + 32$, and they were asked to find $f(3)$. Lynn's answer was 14, Jude's answer was 4, and Anne's answer was ± 4 . Who is correct?
- 1) Lynn, only
 - 2) Jude, only
 - 3) Anne, only
 - 4) Both Lynn and Jude

- 18 The value in dollars, $v(x)$, of a certain car after x years is represented by the equation $v(x) = 25,000(0.86)^x$. To the *nearest dollar*, how much more is the car worth after 2 years than after 3 years?
- 1) 2589
 - 2) 6510
 - 3) 15,901
 - 4) 18,490

- 19 If $g(x) = -4x^2 - 3x + 2$, determine $g(-2)$.

- 20 Given $g(x) = x^3 + 2x^2 - x$, evaluate $g(-3)$.

- 21 The piecewise function $f(x)$ is given below.

$$f(x) = \begin{cases} 2x - 3, & x > 3 \\ -x^2 + 15, & x \leq 3 \end{cases}$$

State the value of $f(3)$. Justify your answer.

- 22 The equation to determine the weekly earnings of an employee at The Hamburger Shack is given by $w(x)$, where x is the number of hours worked.

$$w(x) = \begin{cases} 10x, & 0 \leq x \leq 40 \\ 15(x - 40) + 400, & x > 40 \end{cases}$$

Determine the difference in salary, *in dollars*, for an employee who works 52 hours versus one who works 38 hours. Determine the number of hours an employee must work in order to earn \$445. Explain how you arrived at this answer.

F.IF.A.2: Functional Notation 1**Answer Section**

1 ANS: 1 REF: 061420ai

2 ANS: 1 REF: 081805ai

3 ANS: 2

$$f(-3) = -12 + 5 = -7$$

REF: 061902ai

4 ANS: 3

$$f(8) = \frac{3(8)+4}{2} = \frac{28}{2} = 14$$

REF: 082201ai

5 ANS: 2

$$f(-2) = -3(-2)^2 + 10 = -12 + 10 = -2$$

REF: 012304ai

6 ANS: 1

$$g(-3) = -2(-3)^2 + 3(-3) = -18 - 9 = -27$$

REF: 011902ai

7 ANS: 2

$$g(-4) = -(-4)^2 - (-4) + 5 = -7$$

REF: 062311ai

8 ANS: 2

$$K(-3) = 2(-3)^2 - 5(-3) + 3 = 18 + 15 + 3 = 36$$

REF: 062103ai

9 ANS: 3

$$f(8) = \frac{1}{2}(8)^2 - \left(\frac{1}{4}(8) + 3\right) = 32 - 5 = 27$$

REF: 081704ai

10 ANS: 4

$$k(9) = 2(9)^2 - 3\sqrt{9} = 162 - 9 = 153$$

REF: 061802ai

11 ANS: 2

$$f(2) = 2(3^2) + 1 = 19$$

REF: 012001ai

12 ANS: 3

$$\frac{\sqrt{2\left(\frac{1}{2}\right)+3}}{6\left(\frac{1}{2}\right)-5} = \frac{\sqrt{4}}{-2} = \frac{2}{-2} = -1$$

REF: 081512ai

13 ANS: 3

$$f(1) = 1^2 + 2(1) + 1 = 4$$

$$g(3) = 3(3) + 5 = 14$$

$$f(1) - g(3) = -10$$

REF: 012410ai

14 ANS: 2

$$f(3) = 3(3) - 5 = 4$$

REF: 062202ai

15 ANS: 2

$$f(-2) = (-2 - 1)^2 + 3(-2) = 9 - 6 = 3$$

REF: 081605ai

16 ANS: 4

$$f(-1) = f(-2) = -2$$

REF: 082318ai

17 ANS: 1

$$f(3) = -2(3)^2 + 32 = -18 + 32 = 14$$

REF: 061705ai

18 ANS: 1

$$25,000(0.86)^2 - 25,000(0.86)^3 = 18490 - 15901.40 = 2588.60$$

REF: 011508ai

19 ANS:

$$g(-2) = -4(-2)^2 - 3(-2) + 2 = -16 + 6 + 2 = -8$$

REF: 081925ai

20 ANS:

$$g(-3) = (-3)^3 + 2(-3)^2 - (-3) = -27 + 18 + 3 = -6$$

REF: 062426ai

21 ANS:

$$f(3) = -(3)^2 + 15 = 6$$

REF: 012430ai

22 ANS:

$$\begin{array}{rcl}
 w(52) - w(38) & 15(x - 40) + 400 = 445 & \text{Since } w(x) > 400, x > 40. \text{ I substituted 445 for } w(x) \text{ and solved} \\
 15(52 - 40) + 400 - 10(38) & 15(x - 40) = 45 & \\
 180 + 400 - 380 & x - 40 = 3 & \\
 200 & x = 43 &
 \end{array}$$

for x .

REF: 061534ai