Quadratics #2

2

$$(x^2 - 3) - (-3x^2 + 5)$$

Which of the following expressions is equivalent to the one above?

A) $4x^2 - 8$

B) $4x^2 - 2$

C) $-2x^2 - 8$

D) $-2x^2 - 2$

6

In the equation $(ax + 3)^2 = 36$, a is a constant. If $x = -3$ is one solution to the equation, what is a possible value of a ?

A) -11

B) -5

C) -1

D) 0

9

$$9ax + 9b - 6 = 21$$

Based on the equation above, what is the value of $ax + b$?

A) 5

B) 6

C) 8

D) 12

24

$$h(t) = -16t^2 + 110t + 72$$

The function above models the height h, in feet, of an object above ground t seconds after being launched straight up in the air. What does the number 72 represent in the function?

A) The initial height, in feet, of the object

B) The maximum height, in feet, of the object

C) The initial speed, in feet per second, of the object

D) The maximum speed, in feet per second, of the object

35

$$y = x^2 - 4x + 4$$

$$y = 4 - x$$

If the ordered pair (x, y) satisfies the system of equations above, what is one possible value of x ?

8

$$x + 1 = \frac{2}{x + 1}$$

In the equation above, which of the following is a possible value of $x + 1$?

A) $1 - \sqrt{2}$

B) $\sqrt{2}$

C) 2

D) 4

14

Which of the following is a value of x for which the expression $\frac{-3}{x^2 + 3x - 10}$ is undefined?

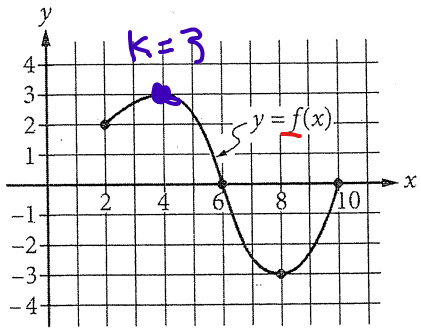
A) -3

B) -2

C) 0

D) 2

30



x	$g(x)$
-2	1
-1	2
0	3
1	4
2	5
3	6
4	7

The complete graph of the function f and a table of values for the function g are shown above. The maximum value of f is k. What is the value of $g(k)$?

A) 7

B) 6

C) 3

D) 0

4 NC

Which of the following complex numbers is equal to $(5 + 12i) - (9i^2 - 6i)$, for $i = \sqrt{-1}$?

A) $-14 - 18i$

B) $4 - 6i$

C) $4 + 6i$

D) $14 + 18i$

5 NC

If $f(x) = \dfrac{x^2 - 6x + 3}{x - 1}$, what is $f(-1)$?

A) -5

B) -2

C) 2

D) 5

7 NC

$K = x^2 + 6x + 4$

Which of the following is equivalent to the expression above?

A) $(x + 3)^2 + 5$

B) $(x + 3)^2 - 5$

C) $(x - 3)^2 + 5$

D) $(x - 3)^2 - 5$

10 NC

$$ax^3 + bx^2 + cx + d = 0$$

In the equation above, a, b, c, and d are constants. If the equation has roots -1, -3, and 5, which of the following is a factor of $ax^3 + bx^2 + cx + d$?

A) $x - 1$

B) $x + 1$

C) $x - 3$

D) $x + 5$

12 NC

The function f is defined by $f(x) = (x + 3)(x + 1)$. The graph of f in the xy-plane is a parabola. Which of the following intervals contains the x-coordinate of the vertex of the graph of f ?

A) $-4 < x < -3$

B) $-3 < x < 1$

C) $1 < x < 3$

D) $3 < x < 4$

13 NC

Which of the following expressions is equivalent to $\dfrac{x^2 - 2x - 5}{x - 3}$?

A) $x - 5 - \dfrac{20}{x - 3}$

B) $x - 5 - \dfrac{10}{x - 3}$

C) $x + 1 - \dfrac{8}{x - 3}$

D) $x + 1 - \dfrac{2}{x - 3}$

20 NC

$$(7532 + 100y^2) + 10(10y^2 - 110)$$

The expression above can be written in the form $ay^2 + b$, where a and b are constants. What is the value of $a + b$?

15 NC

The expression $\dfrac{1}{3}x^2 - 2$ can be rewritten as $\dfrac{1}{3}(x - k)(x + k)$, where k is a positive constant.

What is the value of k ?

A) 2

B) 6

C) $\sqrt{2}$

D) $\sqrt{6}$