# Quadratics

### 1

Which expression is equivalent to

$$(2x^2-4)-(-3x^2+2x-7)$$
 ?

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

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

C) 
$$-x^2 - 2x - 11$$

D) 
$$-x^2 + 2x - 11$$

### \_3

What are the solutions of the quadratic equation

$$4x^2 - 8x - 12 = 0 ?$$

A) 
$$x = -1$$
 and  $x = -3$ 

B) 
$$x = -1$$
 and  $x \neq 3$ 

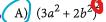
C) 
$$x = 1$$
 and  $x = -3$ 

D) 
$$x \neq 1$$
 and  $x = 3$ 

### 4

$$9a^4 + 12a^2b^2 + 4b^4$$

Which of the following is equivalent to the expression shown above?





3) 
$$(3a + 2l)$$

(9
$$a^2 + 4b^2$$
)

$$D) (9a + 4b)$$

### 4

Which of the following is an example of a function whose graph in the xy-plane has no x-intercepts?

- A) A linear function whose rate of change is not zero
- B) A quadratic function with real zeros
- (C) A quadratic function with no real zeros
- D) A cubic polynomial with at least one real zero

### 5

$$\sqrt{k+2} - 9 = 0$$

In the equation above, k is a constant. If x = 1, what is the value of k?

- A)
- B) 7
- C) 16



### 6

Which of the following is equivalent to the sum of the expressions  $a^2 - 1$  and a + 1?

- $A) a^2 + a$
- B)  $a^3 1$
- C)  $2a^2$
- D)  $a^3$

### 9

$$\sqrt{x-a} = x-4$$

If a = 2, what is the solution set of the equation above?

- A) {3, 6}
- B) {2}
- C) {3}
- D) {6}

## 8

Which of the following is an equivalent form of  $(1.5x - 2.4)^2 - (5.2x^2 - 6.4)$ ?

A) 
$$-2.2x^2 + 1.6$$

B) 
$$-2.2x^2 + 11.2$$

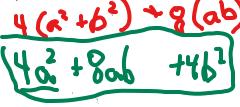
$$(5)$$
  $-2.95x^2 - 7.2x + 12.16$ 

D) 
$$-2.95x^2 - 7.2x + 0.64$$

### 10

I  $a^2 + b^2 = z$  and ab = y, which of the following is equivalent to 4z + 8y?

- A)  $(a + 2b)^2$
- (B)  $(2a + 2b)^2$
- C)  $(4a + 4b)^2$
- D)  $(4a + 8b)^2$



### 12

In the xy plane, the graph of function f has x-intercepts at -3, -1, and 1. Which of the following could define f?

- A) f(x) = (x-3)(x-1)(x+1)
- B)  $f(x) = (x-3)(x-1)^2$
- C) f(x) = (x-1)(x+1)(x+3)
- D)  $f(x) = (x+1)^2(x+3)$

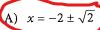


In the quadratic equation above, a is a nonzero constant. The graph of the equation in the xy-plane is a parabola with vertex (c, d). Which of the following is equal to d?

- A) -9a
- B) -8a
- C) -5a
- D) -2a



What are the solutions to  $3x^2 + 12x + 6 = 0$  ?



B) 
$$x = -2 \pm \frac{\sqrt{3}}{3}$$

C) 
$$x = -6 \pm \sqrt{2}$$

D) 
$$x = -6 \pm 6\sqrt{2}$$

$$x^3(x^2 - 5) = -45$$

vhat is one possible solution to the equation









$$\frac{2x+6}{(x+2)^2} - \frac{2}{x+2}$$

The expression above is equivalent to  $\frac{a}{(x+2)^2}$ ,

where a is a positive constant and  $x \neq -2$ .

What is the value of a?



$$x^3 - 5x^2 + 2x - 10 = 0$$

For what real value of x is the equation above true?

What is the sum of the solutions to

$$(x-6)(x+0.7)=0$$
 ?

A) 
$$-6.7$$

B) 
$$-5.3$$

$$h = -4.9t^2 + 25t$$

The equation above expresses the approximate height h, in meters, of a ball t seconds after it is launched vertically upward from the ground with an initial velocity of 25 meters per second. After approximately how many seconds will the ball hit the ground?

- A) 3.5
- B) 4.0
- C) 4.5
- D) 5.0



$$f(x) = (x+6)(x-4)$$

Which of the following is an equivalent form of the function f above in which the minimum value of f

appears as a constant or coefficient?

A) 
$$f(x) = x^2 - 24$$

A) 
$$f(x) = x - 24$$

B)  $f(x) = x^2 + 2x - 24$ 

y =  $\alpha(x - 1)^2 + 1$ 

C) 
$$f(x) = (x-1)^2 - 21$$

$$(D) f(x) = (x+1)^2 - 25$$

## In the xy-plane, the point (3, 6) lies on the graph of the function $f(x) = 3x^2 - bx + 12$ . What is the value of b?

$$(-3x^2 + 5x - 2) - 2(x^2 - 2x - 1)$$

If the expression above is rewritten in the form  $ax^2 + bx + c$ , where a, b, and c are constants, what is the value of b

$$y = x^2 - a$$

In the equation above, a is a positive constant and the graph of the equation in the xy-plane is a parabola. Which of the following is an equivalent form of the equation?

$$A y = (x+a)(x-a)$$



B) 
$$y = (x + \sqrt{a})(x - \sqrt{a})$$

$$y = \left(x + \frac{a}{2}\right)\left(x - \frac{a}{2}\right)$$