

## Additional Practice – Quadratics & Parabolas

No Calculator

1

$$(x + 1)(x - 2) = 10$$

Which of the following is the solution set for the equation above?

- A) {1, -2}
- B) {-1, 2}
- C) {-3, 4}
- D) {-4, 3}

2

What is the sum of all values of  $n$  that satisfy  $3n^2 + 21n + 30 = 0$  ?

- A) -7
- B) -3
- C) 3
- D) 7

3

What are the solutions to the equation below?

$$x^2 + 6x + 4 = 0$$

- A)  $-6 \pm \sqrt{5}$
- B)  $-3 \pm \sqrt{5}$
- C)  $-3 \pm \sqrt{13}$
- D)  $3 \pm \sqrt{26}$

4

$$f(x) = x^2 - 6x + 10$$

Which of the following is an equivalent form of the function  $f$  above in which the coordinates of the vertex of  $f$  appear as constants or coefficients?

- A)  $f(x) = x(x - 6) + 10$
- B)  $f(x) = (x - 3)^2 + 1$
- C)  $f(x) = (x - 6)^2 + 10$
- D)  $f(x) = x^2 - 2(3x - 5)$

**5**

$$y = a(x - 3)(x + 5)$$

In the quadratic equation above,  $a$  is a nonzero constant. The graph of the equation in the  $xy$ -plane is a parabola. What are the coordinates of the vertex of the parabola?

- A)  $(-2, -15a)$
- B)  $(-1, -16a)$
- C)  $(1, -12a)$
- D)  $(2, -10a)$

**6**

$$g(x) = a(x - b)^2 + c$$

In the equation above,  $a$ ,  $b$  and  $c$  are constants and the graph of  $g$  in the  $xy$ -plane is a parabola. The maximum value of the function is  $g(4)$ . Which of the following pairs of points could also be on the graph of  $g(x)$ ?

- A)  $(3, 5)$  and  $(5, 8)$
- B)  $(0, 9)$  and  $(8, 11)$
- C)  $(2, 7)$  and  $(7, 7)$
- D)  $(-1, 10)$  and  $(9, 10)$

The following is a GRID-IN problem.

**7**

If  $2x + 5$  is a factor of  $6x^2 + bx - 10$ , what is the value of  $b$ ?

Calculator Allowed

8

$$y = 4$$
$$y = ax^2 + b$$

In the system of equations above,  $a$  and  $b$  are constants. For which of the following values of  $a$  and  $b$  does the system of equations have no solution?

- A)  $a = 2, b = 1$
- B)  $a = -1, b = 6$
- C)  $a = \frac{1}{2}, b = 4$
- D)  $a = -2, b = 3$

The following is a GRID-IN problem.

9

$$h(t) = -16t^2 + 4t + 10$$

The equation above expresses the approximate height, in feet, of a ball that is tossed vertically from a height of 10 feet with an initial velocity of 4 feet per second. After how many seconds will the ball land on the ground?

The following is a GRID-IN problem.

10

$$f(x) = a(x - 3)(x - 7)$$

In the equation above,  $a$  is a nonzero constant and the graph of the function in the  $xy$ -plane is a parabola. If the minimum value of the function  $f(x)$  is  $-3$ , what is the value of  $a$ .