



## 2-3 Additional Practice

### Factored Form of a Quadratic Function

Factor each quadratic expression.

1.  $x^2 + 4x - 21$

$(x - 3)(x + 7)$

2.  $x^2 - 2x - 15$

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

3.  $2x^2 - 17x + 30$

$(2x - 5)(x - 6)$

Identify the zeros of each function.

4.  $y = 5(x - 3)(x + 5)$

$x = 3, x = -5$

5.  $y = (x - 9)(x + 4)$

$x = 9, x = -4$

6.  $y = (x - 7)^2$

$x = 7$

Solve each quadratic equation by factoring.

7.  $x^2 = -5x$

$0, -5$

8.  $-2x^2 + 5x + 12 = 0$

$-\frac{3}{2}, 4$

9.  $7x^2 + 25x + 12$

$-\frac{4}{7}, -3$

10.  $5x^2 = 3x + 2$

$-\frac{2}{5}, 1$

11.  $-4x^2 + 15x + 4 = 0$

$-\frac{1}{4}, 4$

12.  $x^2 - 4x + 3 = 0$

$1, 3$

Identify the interval(s) on which each quadratic function is positive or negative as shown.

13.  $y = 2x^2 - 17x + 30$  Positive

$x < \frac{5}{2} \text{ and } x > 6$

14.  $y = -7x^2 + 35x - 28$  Positive

$1 < x < 4$

15.  $y = -x^2 - 6x - 8$  Negative

$x < -4 \text{ and } x > -2$

16.  $y = 2x^2 - 4x - 16$  Negative

$-2 < x < 4$

17. A rock is thrown upward from the edge of a bridge and onto a road that is 10 feet below the bridge. The function  $h(x) = -x^2 + 3x + 10$  gives the height,  $h$ , in feet, the rock travels in  $x$  seconds from the time it was thrown. When will the rock hit the road?

**The rock will hit the ground after 5 seconds.**

18. Write an equation of a parabola with  $x$ -intercepts at  $(\frac{1}{4}, 0)$  and  $(-7, 0)$  which passes through the point  $(0, 7)$ .

$y = -(4x - 1)(x + 7)$