Name _____

2-3 Additional Practice

Factored Form of a Quadratic Function

Factor each quadratic expression.

1. $x^2 + 4x - 21$ **2.** $x^2 - 2x - 15$ **3.** $2x^2 - 17x + 30$

Identify the zeros of each function.

4. $y = 5(x - 3)(x + 5)$ **5.** $y = (x - 9)(x + 4)$ **6.** $y = (x - 7)^2$

Solve each quadratic equation by factoring.

7. $x^2 = -5x$ **8.** $-2x^2 + 5x + 12 = 0$ **9.** $7x^2 + 25x + 12$

10. $5x^2 = 3x + 2$ **11.** $-4x^2 + 15x + 4 = 0$ **12.** $x^2 - 4x + 3 = 0$

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

13. $y = 2x^2 - 17x + 30$ Positive **14.** $y = -7x^2 + 35x - 28$ Positive

15. $y = -x^2 - 6x - 8$ Negative **16.** $y = 2x^2 - 4x - 16$ Negative

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?

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

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

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

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

$1 < x < 4$

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

$x < -4$ 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 $\left(\frac{1}{4}, 0\right)$ and $(-7, 0)$ which passes through the point $(0, 7)$.

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