

Name: _____

SM2 Unit 5 Review

Factor the greatest common factor out of each expression.

1) $35k^2 + 25$

2) $10x^2 + 2x$

3) $x^5 - 4x^4 + 3x^2 - 7x$

4) $-4x^3 + 8x^2 + 16x$

Factor each completely.

5) $6n^3 - 42n^2 - n + 7$

6) $3n^3 + 5n^2 - 24n - 40$

7) $2n^2 - 11n + 14$

8) $25r^2 - 81$

9) $x^2 + 15x + 54$

10) $x^2 + 14x + 54$

Solve each equation using the zero factor property.

11) $(n - 7)(3n + 4) = 0$

12) $(a - 1)(a - 4) = 0$

13) $(r + 6)(4r + 7) = 0$

14) $(x + 7)(x - 8) = 0$

Solve each equation.

15) $x^2 - 3x - 10 = 0$

16) $2r^2 + 9r + 7 = 0$

17) $v^2 - 2v = 0$

18) $5k^2 + 25k - 30 = 0$

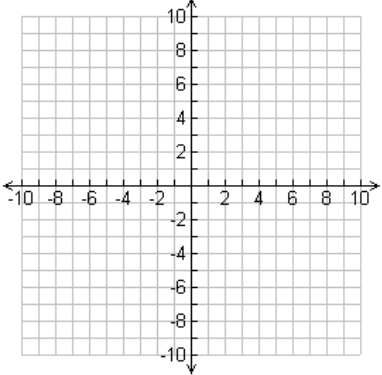
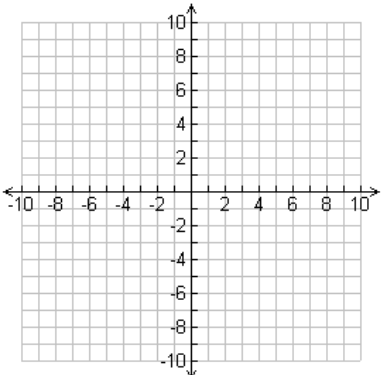
19) $0 = -35b^2 - 28b$

20) $x^2 - 49 = 0$

21) $3v^2 - v = 2$

22) $7n^2 - 16 = -24n$

a) Find the real roots of each quadratic function. b) Then sketch the graph of each quadratic function and label the roots. c) Determine the positive and negative intervals.

<p>23)</p>	<p>$f(x) = x^2 - 11x + 24$</p> 	<p>Vertex: _____</p> <p>x-intercept(s): _____</p> <p>Positive: _____</p> <p>Negative: _____</p> <p>y-intercept: _____</p>
<p>24)</p>	<p>$y = -x^2 + 5x$</p> 	<p>Vertex: _____</p> <p>x-intercept(s): _____</p> <p>Positive: _____</p> <p>Negative: _____</p> <p>y-intercept: _____</p>

- 25) A soccer ball is kicked from the ground and travels a parabolic path modeled by $h(t) = -16t^2 + 32t$, where $h(t)$ is the height of the soccer ball in feet above the ground t seconds after being kicked. Assuming the ball lands on level ground, about how long is the ball in the air?
- 26) The income in dollars for a school talent show is $I(p) = 40p - 8p^2$, where p is the ticket price. What ticket price(s) will result in an income of \$0?
- 27) The height of a baseball in feet x seconds after it is thrown is given by $h(x) = -16x^2 + 32x + 6$. When will the ball be at a height of 22 feet?
- 28) As part of a science experiment, Carson designs and creates a cushioned egg carrier. He puts an egg inside it, and then drops it from a window that is 64 feet high to see whether his design can safely cushion the egg and keep it from breaking. The egg's height in feet x seconds after being dropped is given by $h(x) = 64 - 16x^2$. After how many seconds will the egg hit the ground?