Name: _____ Per: ____

Unit 3 Study Guide

Determine the requested features of each quadratic.

1a. Factor, complete the square or use the quadratic formula to determine the roots. $f(x) = x^2 - 5x + 2$	1b. Factor, complete the square or use the quadratic formula to determine the roots. $g(x) = 3x^2 - x + 4$	1c. Factor, complete the square or use the quadratic formula to determine the roots. $h(x) = 2x^2 + 5x - 7$
2a. Determine the zeros. $j(x) = 2(x + 1)(x - 3)$	2b. Determine the zeros. $k(x) = -3(x - 2)(x + 4)$	2c. Determine the zeros. $m(x) = -10(x)(x - 6)$
3a. Determine the zeros. $n(x) = (x + 3)^2 - 4$	3b. Determine the zeros. $p(x) = 2(x - 4)^2 + 8$	3c. Determine the zeros. $q(x) = -3(x + 1)^2 + 3$
4a. Use the quadratic formula or complete the square to determine the zeros. $r(x) = -x^2 - 2x + 1$	4b. Use the quadratic formula or complete the square to determine the zeros. $t(x) = x^2 + 6x + 10$	4c. Use the quadratic formula or complete the square to determine the zeros. $v(x) = x^2 - 8x + 1$

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5a. Determine whether or not each of the following quadratics has a vertex at $(-3, 4)$.

	Yes	No
A. $f(x) = -3(x-3)^2 + 4$		
B. $g(x) = 2(x+3)^2 + 4$		
C. $h(x) = (x-3)(x+4)$		
D. $j(x) = -5(x+3)^2 + 4$		
E. $k(x) = -3(x)(x+4)$		
F. $m(x) = 5(x+3)(x-4)$		

5b. Determine whether or not each of the following quadratics has a vertex at $(-1, 5)$.

	Yes	No
A. $f(x) = 2(x-1)^2 + 5$		
B. $g(x) = -2(x+1)^2 + 5$		
C. $h(x) = -5x(x+2)$		
D. $j(x) = 7(x+1)^2 + 5$		
E. $k(x) = -(x-1)(x+5)$		
F. $m(x) = 3(x+1)(x-5)$		

5c. Determine whether or not each of the following quadratics has a vertex at $(2, -4)$.

	Yes	No
A. $f(x) = (x-2)^2 - 4$		
B. $g(x) = (x+2)^2 - 4$		
C. $h(x) = 2x(x-4)$		
D. $j(x) = 5(x-2)(x+4)$		
E. $k(x) = -3(x-2)^2 + 4$		
F. $m(x) = x(x-4)$		

6a. Determine the vertex.

$n(x) = 2x^2 - 20x - 3$

6b. Determine the vertex.

$p(x) = 4x^2 + 16x + 19$

6c. Determine the vertex.

$q(x) = -x^2 - 8x - 22$

Convert the equation.

7a. Write in factored form.

$r(x) = -x^2 + 9x + 22$

7b. Write in factored form.

$t(x) = 36x^2 - 4$

7c. Write in factored form.

$v(x) = 3x^2 - 33x + 84$

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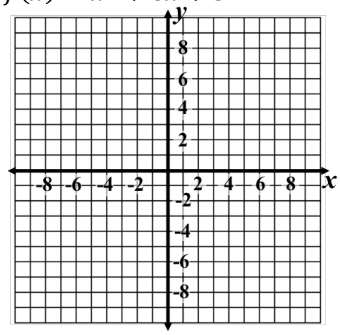
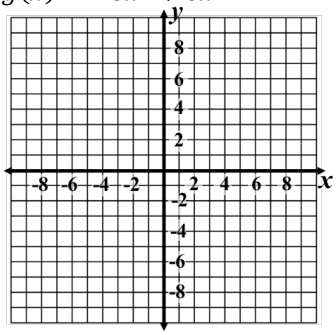
Graph.

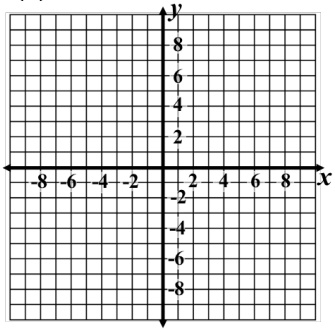
8a. Graph. $f(x) = x^2 + 6x + 5$



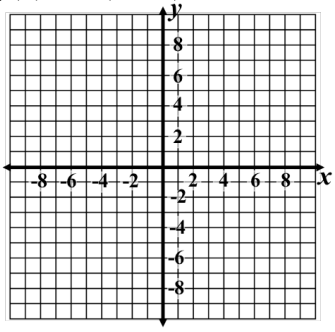
8b. Graph. $g(x) = -3x^2 + 6x$



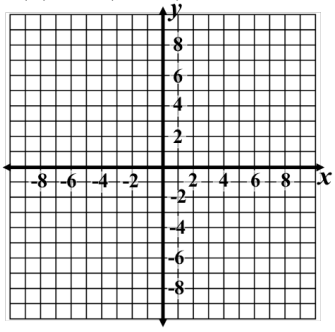
8c. Graph. $h(x) = 2x^2 + 4x - 6$



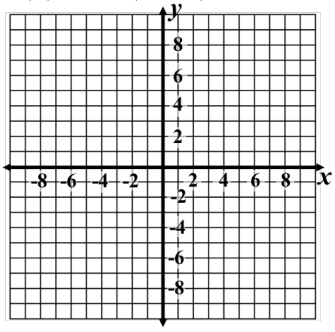
9a. Graph. $j(x) = -(x + 4)^2 + 9$



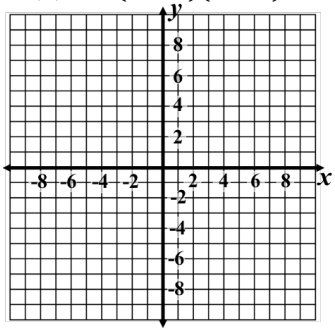
9b. Graph. $k(x) = 3(x - 2)^2 - 3$



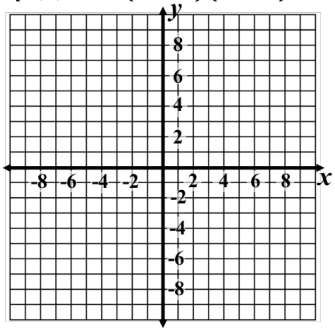
9c. Graph. $m(x) = -2(x - 3)^2 + 8$



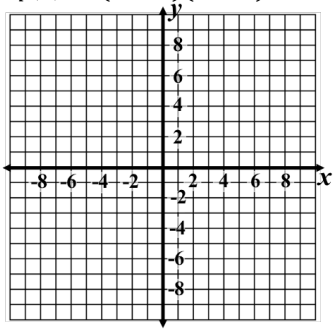
10a. Graph. $n(x) = 3(x - 1)(x + 1)$



10b. Graph. $p(x) = -(x + 3)(x + 3)$



10c. Graph. $q(x) = (x + 2)(x - 4)$



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Unit 3 Study Guide Answers

<table>
<tr><td>1a. $x = \frac{5}{2} + \frac{\sqrt{17}}{2}$ or $x = \frac{5}{2} - \frac{\sqrt{17}}{2}$</td><td>1b. $x = -1$ or $x = -\frac{4}{3}$</td><td>1c. $x = -\frac{7}{2}$ or $x = 1$</td></tr>
<tr><td>2a. $x = -1$ or $x = 3$</td><td>2b. $x = 2$ or $x = -4$</td><td>2c. $x = 0$ or $x = 6$</td></tr>
<tr><td>3a. $x = -1$ or $x = -5$</td><td>3b. $x = 4 + 2i$ or $x = 4 - 2i$</td><td>3c. $x = 0$ or $x = -2$</td></tr>
<tr><td>4a. $x = 1 + \sqrt{2}$ or $x = 1 - \sqrt{2}$</td><td>4b. $x = -3 + i$ or $x = -3 - i$</td><td>4c. $x = 4 + \sqrt{15}$ or $x = 4 - \sqrt{15}$</td></tr>
<tr><td>5a.
<table><tr><th></th><th>Yes</th><th>No</th></tr><tr><td>A</td><td></td><td>x</td></tr><tr><td>B</td><td>x</td><td></td></tr><tr><td>C</td><td></td><td>x</td></tr><tr><td>D</td><td>x</td><td></td></tr><tr><td>E</td><td></td><td>x</td></tr><tr><td>F</td><td></td><td>x</td></tr></table></td><td>5b.
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<tr><td>6a. $(5, -53)$</td><td>6b. $(-2, 3)$</td><td>6c. $(-4, -6)$</td></tr>
<tr><td>7a. $r(x) = -(x + 2)(x - 11)$</td><td>7b. $t(x) = 36\left(x + \frac{1}{3}\right)\left(x - \frac{1}{3}\right)$</td><td>7c. $v(x) = 3(x - 4)(x - 7)$</td></tr>
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 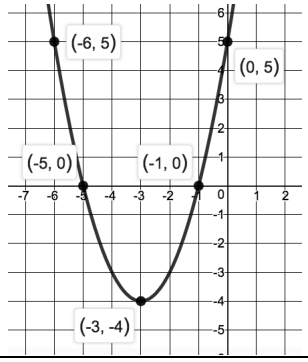
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 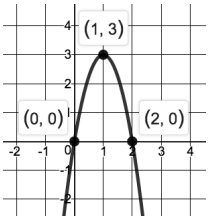
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 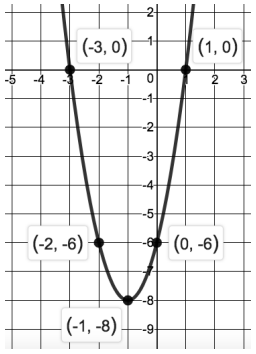
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 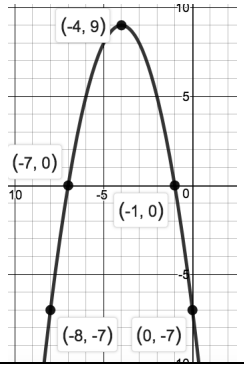
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 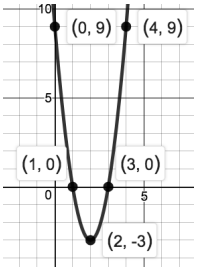
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 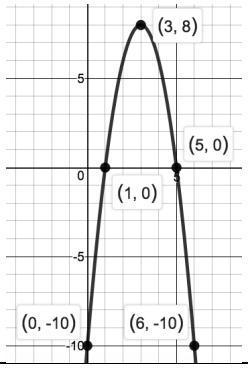
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 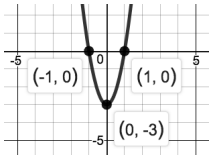
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 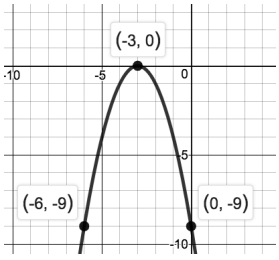
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 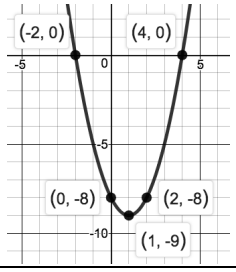
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