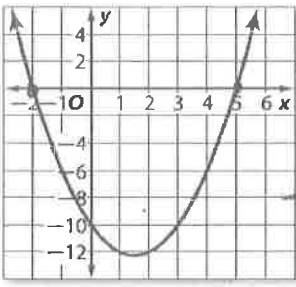
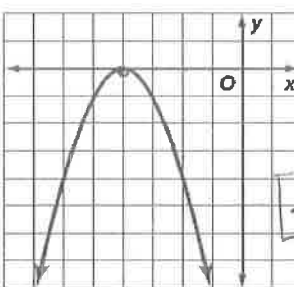
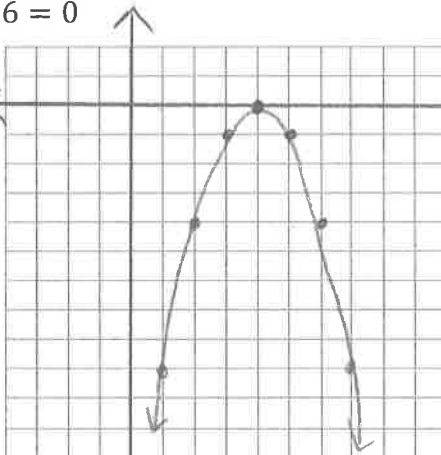
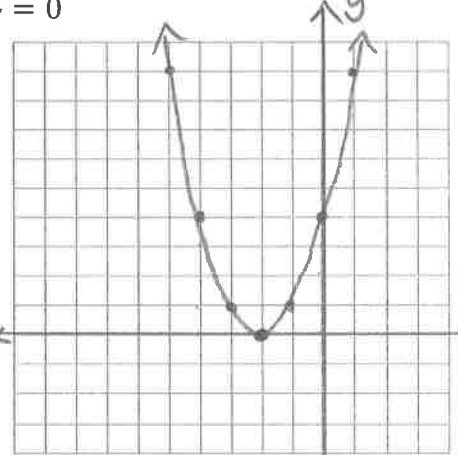


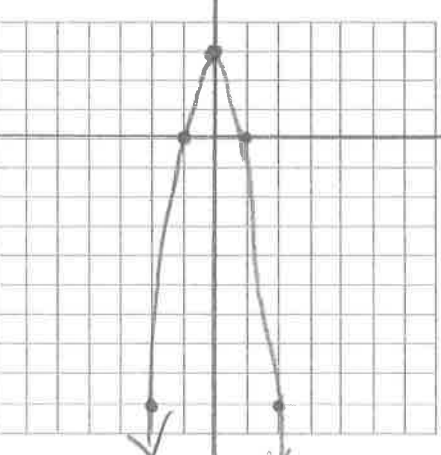
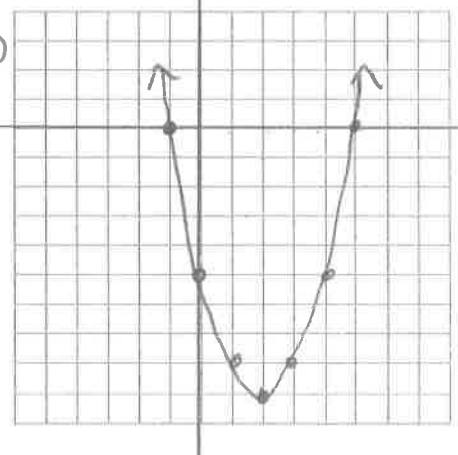
4.2 Solving Quadratics by Graphing

For exercises 1-2 list how many solutions are present. Then write an equation in factored form and in standard form.

<p>1. </p> <p>$a = +$</p> <p>$X = -2 \quad X = 5$</p> <p>$X + 2 = 0 \quad X - 5 = 0$</p> <p>$(X + 2)(X - 5) = 0$</p> <p>$X(X - 5) + 2(X - 5) = 0$</p> <p>$X^2 - 5X + 2X - 10 = 0$</p> <p>$X^2 - 3X - 10 = 0$</p>	<p>2. </p> <p>$a = -$</p> <p>$X = -4$</p> <p>$X + 4 = 0$</p> <p>$-(X + 4)(X + 4) = 0$</p> <p>$-X^2 - 8X - 16 = 0$</p> <p>$-(X(X + 4) + 4(X + 4)) = 0$</p> <p>$-(X^2 + 4X + 4X + 16) = 0$</p> <p>$-(X^2 + 8X + 16) = 0$</p>
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Solve problems 3-6 by graphing. Draw your own axis so your graph fits. Box your answer(s). Show your work!

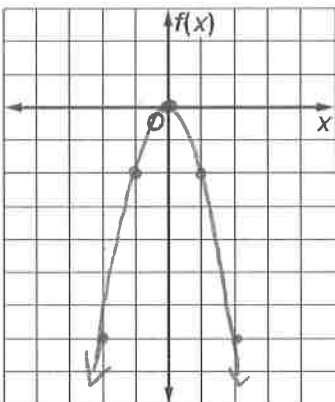
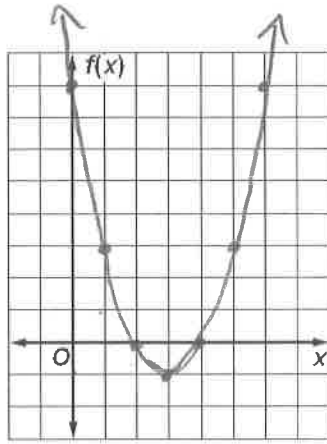
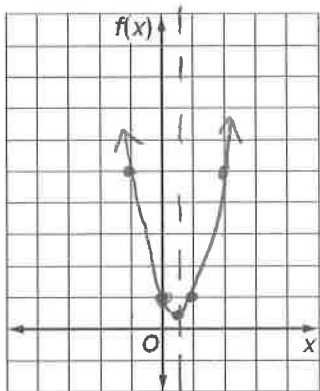
<p>3. $-x^2 + 8x - 16 = 0$</p> <p>$X = 4$</p>  <p>check:</p> <p>$-4^2 + 8(4) - 16 \stackrel{?}{=} 0$</p> <p>$-16 + 32 - 16 \stackrel{?}{=} 0$</p> <p>$16 - 16 = 0 \checkmark$</p>	<p>4. $x^2 + 4x + 4 = 0$</p> <p>$X = -2$</p>  <p>check</p> <p>$(-2)^2 + 4(-2) + 4 \stackrel{?}{=} 0$</p> <p>$4 - 8 + 4$</p> <p>$-4 + 4 = 0 \checkmark$</p>
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<p>5. $-3x^2 + 3 = 0$</p> <p>$(0, 3)$ y-int</p> <p>$X = -1$</p> <p>$X = 1$</p>  <p>check:</p> <p>$-3(-1)^2 + 3$</p> <p>$-3 + 3 = 0 \checkmark$</p> <p>$-3(1)^2 + 3 =$</p> <p>$-3 + 3 = 0 \checkmark$</p>	<p>13. $-5 - 4x + x^2 = 0$</p> <p>$X^2 - 4x - 5 = 0$</p> <p>$X = -1$</p> <p>$X = 5$</p>  <p>check:</p> <p>$(-1)^2 - 4(-1) - 5 \stackrel{?}{=} 0$</p> <p>$1 + 4 - 5 = 0$</p> <p>$5 - 5 = 0 \checkmark$</p> <p>$-5 - 4(5) + 5^2 \stackrel{?}{=} 0$</p> <p>$-5 - 20 + 25 = 0$</p> <p>$-25 + 25 = 0 \checkmark$</p>
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4.1 Graphing Quadratics

Complete parts a-c for each quadratic function.

- Find the y -intercept, the equation of the axis of symmetry, and the x -coordinate of the vertex.
- Make a table of values that includes the vertex.
- Use this information to graph the function.

<p>1. $f(x) = -2x^2$ AOS $x=0$ $b=0$ (0,0) vertex (0,0) y-int max at 0</p> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 0 5px;">-2</td><td style="padding: 0 5px;">-8</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">-1</td><td style="padding: 0 5px;">-2</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">0</td><td style="padding: 0 5px;">0</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">1</td><td style="padding: 0 5px;">-2</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">2</td><td style="padding: 0 5px;">-8</td></tr> </table> 	-2	-8	-1	-2	0	0	1	-2	2	-8	<p>2. $f(x) = x^2 - 6x + 8$</p> <p>$x = \frac{6}{2} = 3$ $f(3) = 9 - 18 + 8 = -1$</p> <p>AOS $x=3$ vertex (3, -1) y-int (0, 8) min @ -1</p> 	<p>3. $f(x) = 2x^2 - 2x + 1$</p> <p>$x = \frac{2}{4} = \frac{1}{2}$ $f(\frac{1}{2}) = \frac{1}{2} - 1 + 1 = \frac{1}{2}$</p> <p>AOS $x = \frac{1}{2}$ vertex $(\frac{1}{2}, \frac{1}{2})$ y-int (0, 1)</p> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 0 5px;">-1</td><td style="padding: 0 5px;">1</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">0</td><td style="padding: 0 5px;">1</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">1/2</td><td style="padding: 0 5px;">1/2</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">1</td><td style="padding: 0 5px;">1</td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">2</td><td style="padding: 0 5px;">5</td></tr> </table> 	-1	1	0	1	1/2	1/2	1	1	2	5
-2	-8																					
-1	-2																					
0	0																					
1	-2																					
2	-8																					
-1	1																					
0	1																					
1/2	1/2																					
1	1																					
2	5																					

Determine whether each function has a maximum or a minimum value, and find that value. Then state the domain and range of the function.

<p>4. $f(x) = -8x^2$ $a = -8$ max at 0</p> <p>$\frac{-b}{2a} = 0$ (0,0) $D: x \text{ all } \mathbb{R}$ $R: y \leq 0$</p>	<p>5. $f(x) = x^2 + 2x$ $a = 1$ MIN at -1 $D: x \text{ all } \mathbb{R}$ $R: y \geq -1$</p> <p>$\frac{-2}{2(1)} = -1$ $(-1)^2 + 2(-1) = -1$ $1 - 2 = -1$ vertex (-1, -1)</p>
<p>6. $f(x) = 3x^2 + 12x + 3$ $a = 3$ min at -9 $D: x \text{ all } \mathbb{R}$ $R: y \geq -9$</p> <p>$\frac{-b}{2a} = \frac{-12}{2(3)} = \frac{-12}{6} = -2$ $3(-2)^2 + 12(-2) + 3 = 12 - 24 + 3 = -9$ ✓ (-2, -9)</p>	<p>7. $f(x) = -2x^2 + 8x + 7$ MAX at 15 $D: x \text{ all } \mathbb{R}$ $R: y \leq 15$</p> <p>$\frac{-8}{2(-2)} = 2$ $-2(2)^2 + 8(2) + 7 = -8 + 16 + 7 = 15$ ✓ (2, 15)</p>