ANSWER PRESENTATION TOOL

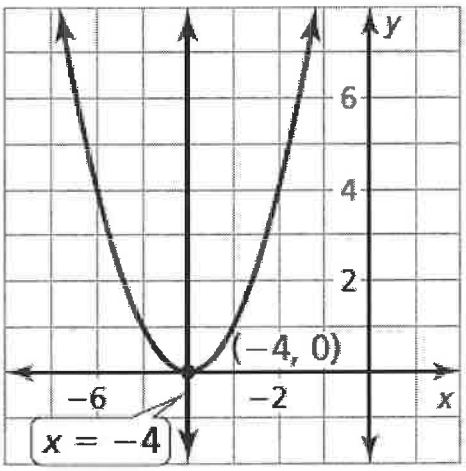
Algebra 2 - Student Edit | 2 | 2 - Practice | 2-8,14-24,2 | ALL EVEN ODD | Show Sol

2. Identify the constants $a = 1$, $h = -4$, and $k = 0$. Plot the vertex $(h, k) = (-4, 0)$ and draw the axis of symmetry $x = -4$. Evaluate the function for two values of x.

$x = -3$: $h(-3) = (-3 + 4)^2 = 1$

$x = -2$: $h(-2) = (-2 + 4)^2 = 4$

Plot the points $(-3, 1)$, $(-2, 4)$, and their reflections in the axis of symmetry. Draw a parabola through the plotted points.

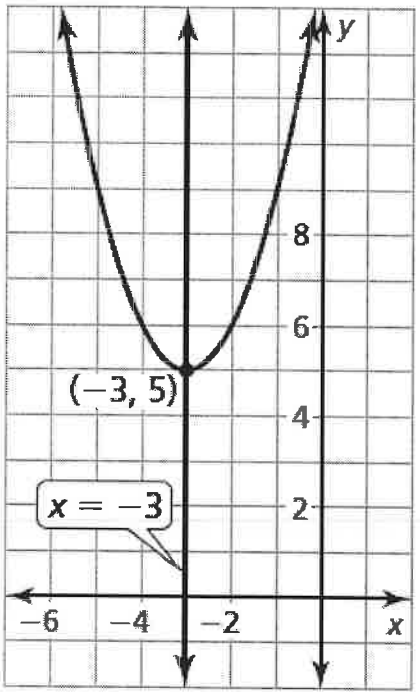


3. Identify the constants $a = 1$, $h = -3$, and $k = 5$. Plot the vertex $(h, k) = (-3, 5)$ and draw the axis of symmetry $x = -3$. Evaluate the function for two values of x.

$x = -1$: $g(-1) = (-1 + 3)^2 + 5 = 9$

$x = -2$: $g(-2) = (-2 + 3)^2 + 5 = 6$

Plot the points $(-1, 9)$, $(-2, 6)$, and their reflections in the axis of symmetry. Draw a parabola through the plotted points.

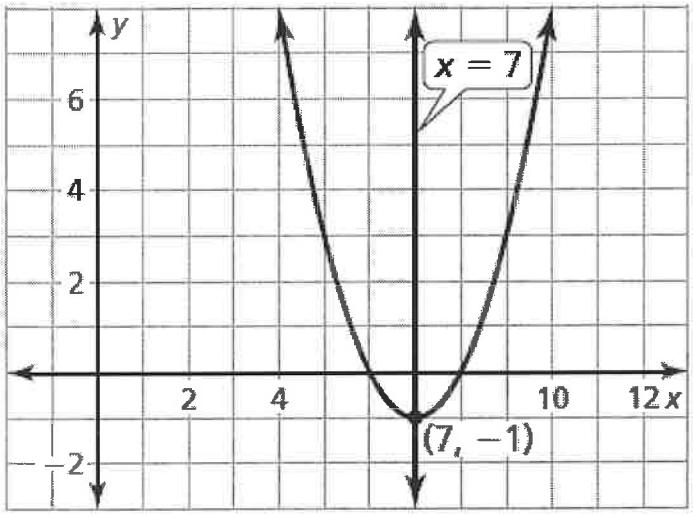


4. Identify the constants $a = 1$, $h = 7$, and $k = -1$. Plot the vertex $(h, k) = (7, -1)$ and draw the axis of symmetry $x = 7$. Evaluate the function for two values of x.

$x = 5$: $y = (5 - 7)^2 - 1 = 3$

$x = 6$: $y = (6 - 7)^2 - 1 = 0$

Plot the points (5, 3), (6, 0), and their reflections in the axis of symmetry. Draw a parabola through the plotted points.

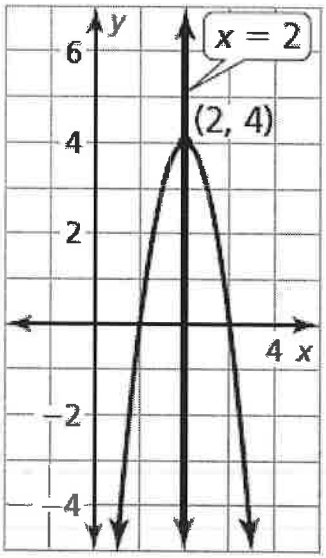


5. Identify the constants $a = -4$, $h = 2$, and $k = 4$. Plot the vertex $(h, k) = (2, 4)$ and draw the axis of symmetry $x = 2$. Evaluate the function for two values of x.

$x = 4$: $y = -4(4 - 2)^2 + 4 = -20$

$x = 3$: $y = -4(3 - 2)^2 + 4 = 0$

Plot the points $(4, -20)$, $(3, 0)$, and their reflections in the axis of symmetry. Draw a parabola through the plotted points.

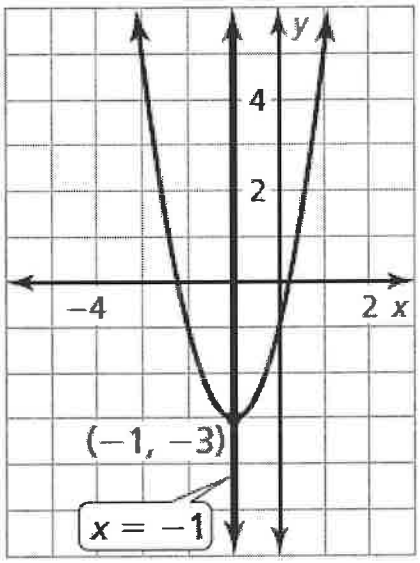


6. Identify the constants $a = 2$, $h = -1$, and $k = -3$. Plot the vertex $(h, k) = (-1, -3)$ and draw the axis of symmetry $x = -1$. Evaluate the function for two values of x.

$x = 1$: $g(1) = 2(1 + 1)^2 - 3 = 5$

$x = 0$: $g(0) = 2(0 + 1)^2 - 3 = -1$

Plot the points $(1, 5)$, $(0, -1)$, and their reflections in the axis of symmetry. Draw a parabola through the plotted points.

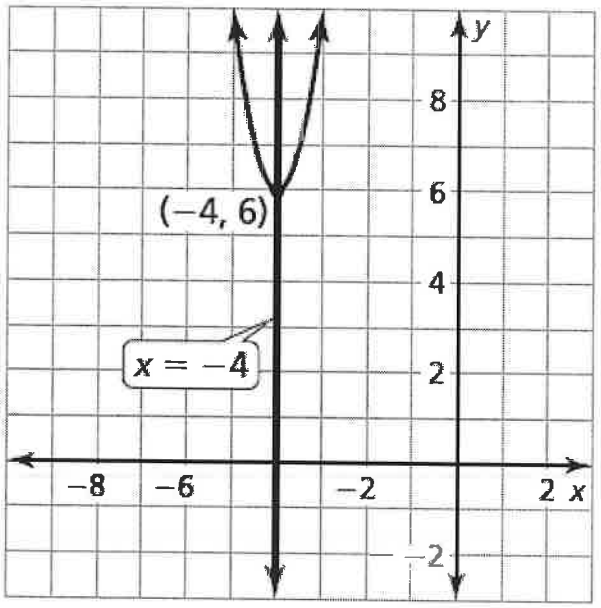


7. Identify the constants $a = 4$, $h = -4$, and $k = 6$. Plot the vertex $(h, k) = (-4, 6)$ and draw the axis of symmetry $x = -4$. Evaluate the function for two values of x.

$x = -6$: $h(-6) = 4(-6 + 4)^2 + 6 = 22$

$x = -5$: $h(-5) = 4(-5 + 4)^2 + 6 = 10$

Plot the points $(-6, 22)$, $(-5, 10)$, and their reflections in the axis of symmetry. Draw a parabola through the plotted points.

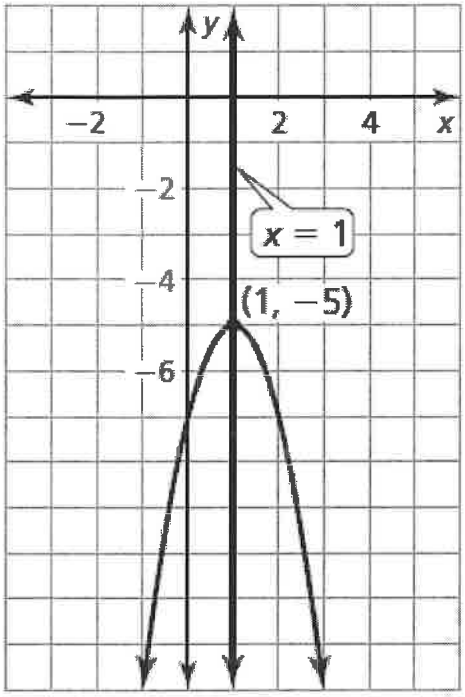


8. Identify the constants $a = -2$, $h = 1$, and $k = -5$. Plot the vertex $(h, k) = (1, -5)$ and draw the axis of symmetry $x = 1$. Evaluate the function for two values of x.

$x = 3: f(3) = -2(3 - 1)^2 - 5 = -13$

$x = 2: f(2) = -2(2 - 1)^2 - 5 = -7$

Plot the points $(3, -13)$, $(2, -7)$, and their reflections in the axis of symmetry. Draw a parabola through the plotted points.



14. D; The axis of symmetry is $x = -4$.

15. B; The axis of symmetry is $x = -1$.

16. A; The axis of symmetry is $x = 2$.

17. Identify the coefficients $a = 1$, $b = 2$, and $c = 1$. Because $a > 0$, the parabola opens up. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{2}{2(1)} = -1$$

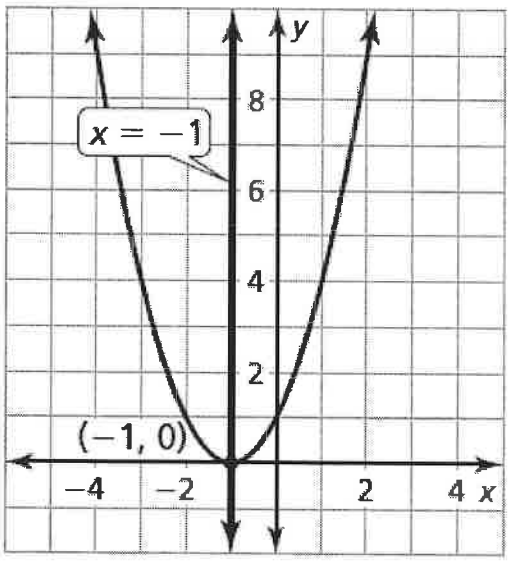
Then find the y-coordinate of the vertex.

$$y = (-1)^2 + 2(-1) + 1 = 0$$

So, the vertex is $(-1, 0)$. Plot this point. Draw the axis of symmetry. Identify the y-intercept, c, which is 1. Plot the point $(0, 1)$ and its reflection in the axis of symmetry, $(-2, 1)$. Evaluate the function for another value of x, such as $x = 1$.

$$y = 1^2 + 2(1) + 1 = 4$$

Plot the point $(1, 4)$ and its reflection in the axis of symmetry, $(-3, 4)$. Draw a parabola through the plotted points.



18. Identify the coefficients $a = 3$, $b = -6$, and $c = 4$. Because $a > 0$, the parabola opens up. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{-6}{2(3)} = 1$$

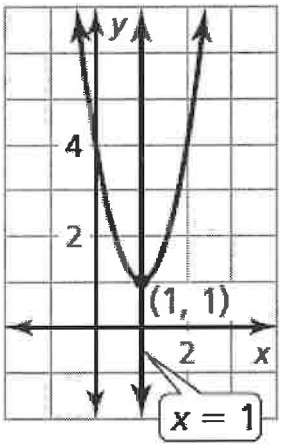
Then find the y-coordinate of the vertex.

$$y = 3(1)^2 - 6(1) + 4 = 1$$

So, the vertex is (1, 1). Plot this point. Draw the axis of symmetry. Identify the y-intercept, c, which is 4. Plot the point (0, 4) and its reflection in the axis of symmetry, (2, 4). Evaluate the function for another value of x, such as $x = 3$.

$$y = 3(3)^2 - 6(3) + 4 = 13$$

Plot the point (3, 13) and its reflection in the axis of symmetry, (−1, 13). Draw a parabola through the plotted points.



19. Identify the coefficients $a = -4$, $b = 8$, and $c = 2$. Because $a < 0$, the parabola opens down. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{8}{2(-4)} = 1$$

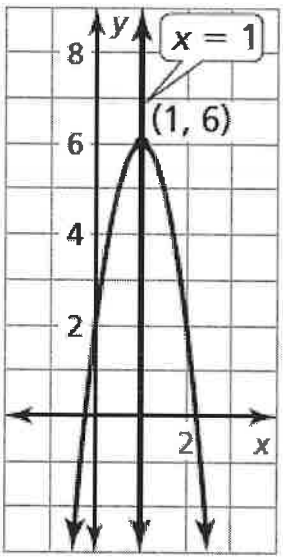
Then find the y-coordinate of the vertex.

$$y = -4(1)^2 + 8(1) + 2 = 6$$

So, the vertex is (1, 6). Plot this point. Draw the axis of symmetry. Identify the y-intercept, c, which is 2. Plot the point (0, 2) and its reflection in the axis of symmetry, (2, 2). Evaluate the function for another value of x, such as $x = 3$.

$$y = -4(3)^2 + 8(3) + 2 = -10$$

Plot the point (3, −10) and its reflection in the axis of symmetry, (−1, −10). Draw a parabola through the plotted points.



20. Identify the coefficients $a = -1$, $b = -6$, and $c = 3$. Because $a < 0$, the parabola opens down. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{-6}{2(-1)} = -3$$

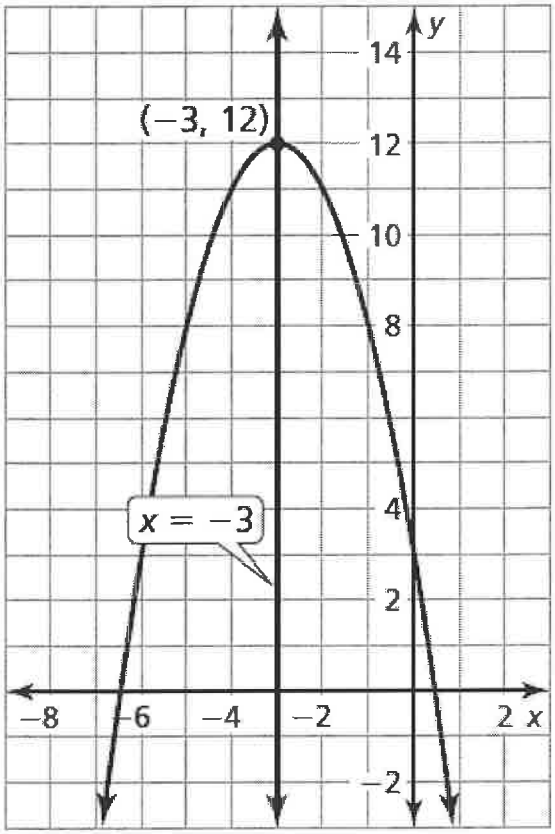
Then find the y-coordinate of the vertex.

$$f(-3) = -(-3)^2 - 6(-3) + 3 = 12$$

So, the vertex is $(-3, 12)$. Plot this point. Draw the axis of symmetry. Identify the y-intercept, c, which is 3. Plot the point $(0, 3)$ and its reflection in the axis of symmetry, $(-6, 3)$. Evaluate the function for another value of x, such as $x = 1$.

$$f(1) = -(1)^2 - 6(1) + 3 = -4$$

Plot the point $(1, -4)$ and its reflection in the axis of symmetry, $(-7, -4)$. Draw a parabola through the plotted points.



21. Identify the coefficients $a = -1$, $b = 0$, and $c = -1$. Because $a < 0$, the parabola opens down. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{0}{2(-1)} = 0$$

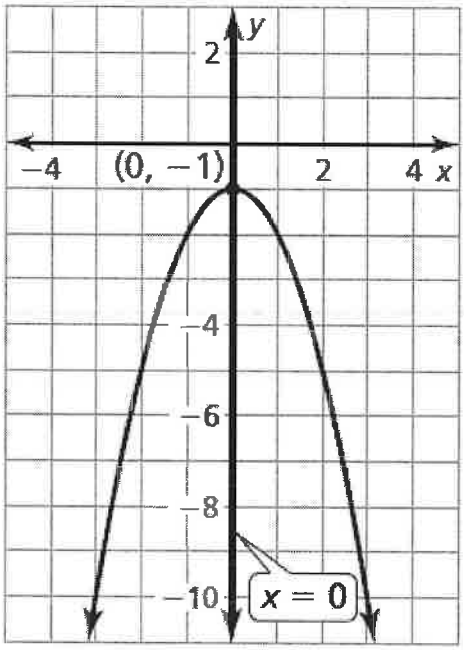
Then find the y-coordinate of the vertex.

$$g(0) = -(0)^2 - 1 = -1$$

So, the vertex is $(0, -1)$. Plot this point. Draw the axis of symmetry. Evaluate the function for another value of x, such as $x = 2$.

$$g(2) = -(2)^2 - 1 = -5$$

Plot the point $(2, -5)$ and its reflection in the axis of symmetry, $(-2, -5)$. Draw a parabola through the plotted points.



22. Identify the coefficients $a = 6$, $b = 0$, and $c = -5$. Because $a > 0$, the parabola opens up. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{0}{2(6)} = 0$$

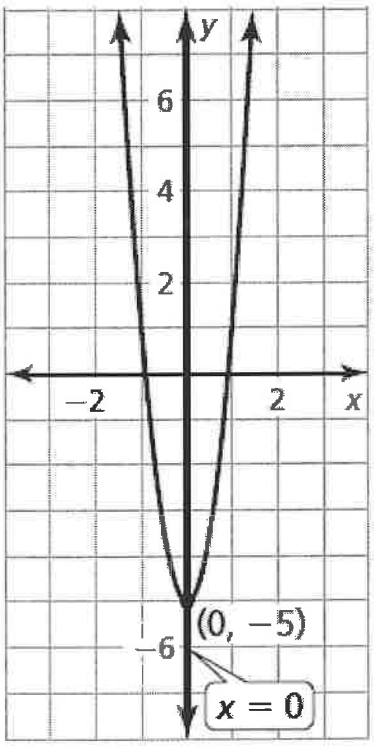
Then find the y-coordinate of the vertex.

$$f(0) = 6(0)^2 - 5 = -5$$

So, the vertex is $(0, -5)$. Plot this point. Draw the axis of symmetry. Evaluate the function for another value of x, such as $x = 1$.

$$f(1) = 6(1)^2 - 5 = -5$$

Plot the point $(1, -5)$ and its reflection in the axis of symmetry, $(-1, -5)$. Draw a parabola through the plotted points.



23. Identify the coefficients $a = -1.5$, $b = 3$, and $c = 2$. Because $a < 0$, the parabola opens down. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{3}{2(-1.5)} = 1$$

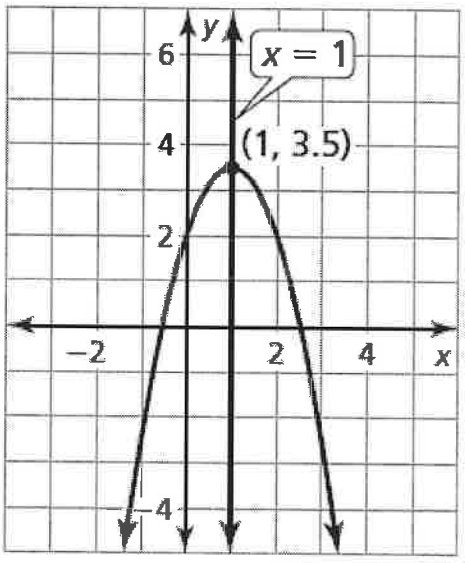
Then find the y-coordinate of the vertex.

$$g(1) = -1.5(1)^2 + 3(1) + 2 = 3.5$$

So, the vertex is (1, 3.5). Plot this point. Draw the axis of symmetry. Identify the y-intercept, c, which is 2. Plot the point (0, 2) and its reflection in the axis of symmetry, (2, 2). Evaluate the function for another value of x, such as $x = 3$.

$$g(3) = -1.5(3)^2 + 3(3) + 2 = -2.5$$

Plot the point (3, 2.5) and its reflection in the axis of symmetry, (−3, 2.5). Draw a parabola through the plotted points.



24. Identify the coefficients $a = 0.5$, $b = 1$, and $c = -3$. Because $a > 0$, the parabola opens up. Find the vertex. First calculate the x-coordinate.

$$x = -\frac{b}{2a} = -\frac{1}{2(0.5)} = -1$$

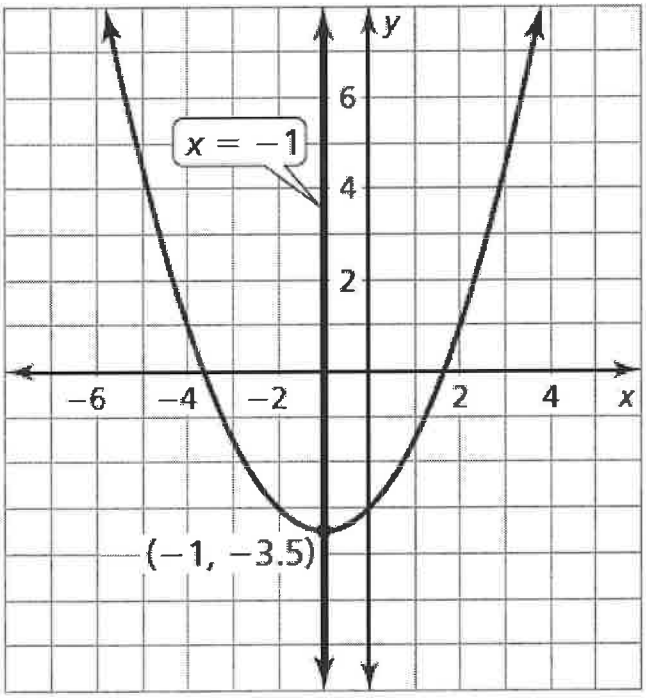
Then find the y-coordinate of the vertex.

$$f(-1) = 0.5(-1)^2 + (-1) - 3 = -3.5$$

So, the vertex is $(-1, -3.5)$. Plot this point. Draw the axis of symmetry. Identify the y-intercept, c, which is -3. Plot the point $(0, -3)$ and its reflection in the axis of symmetry, $(-2, -3)$. Evaluate the function for another value of x, such as $x = 3$.

$$f(3) = 0.5(3)^2 + (3) - 3 = 4.5$$

Plot the point $(3, 4.5)$ and its reflection in the axis of symmetry, $(-5, 4.5)$. Draw a parabola through the plotted points.



28. The y-intercept is -7; The negative in front of the 7 is associated with the 7 when determining c.

32. Identify the coefficients $a = 9$, $b = 0$, and $c = 7$. Because $a > 0$, the parabola opens up and the function has a minimum value. To calculate the minimum value, calculate the coordinates of the vertex.

$$x = -\frac{b}{2a} = -\frac{0}{2(9)} = 0 \rightarrow y = 9(0)^2 + 7 = 7$$

The minimum value is 7. So, the domain is all real numbers and the range is $y \geq 7$. The function is decreasing to the left of $x = 0$ and increasing to the right of $x = 0$.

34. Identify the coefficients $a = -3$, $b = -6$, and $c = 5$. Because $a < 0$, the parabola opens down and the function has a maximum value. To calculate the maximum value, calculate the coordinates of the vertex.

$$x = -\frac{b}{2a}$$

$$= -\frac{-6}{2(-3)}$$

$$= -1 \rightarrow g(-1) = -3(-1)^2 - 6(-1) + 5 = 8$$

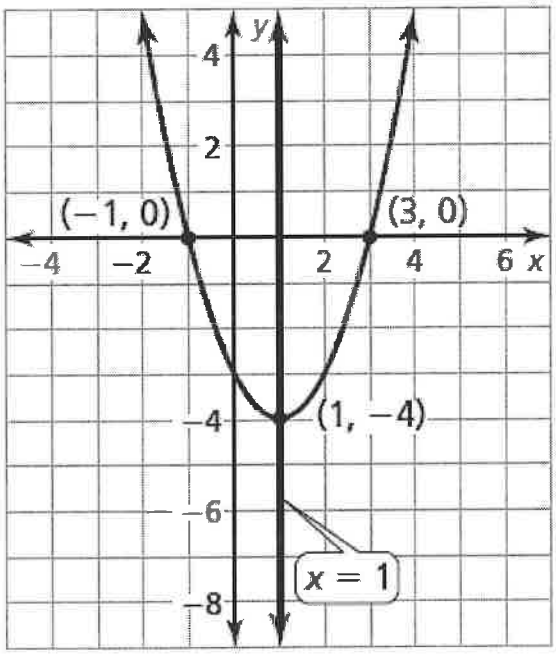
The maximum value is 8. So, the domain is all real numbers and the range is $y \leq 8$. The function is increasing to the left of $x = -1$ and decreasing to the right of $x = -1$.

46. Identify the x-intercepts. The x-intercepts are $p = -1$ and $q = 3$, so the parabola passes through the points $(-1, 0)$ and $(3, 0)$. Find the coordinates of the vertex.

$$x = \frac{p + q}{2} = \frac{(-1) + (3)}{2} = 1$$

$$y = (1 + 1)(1 - 3) = -4$$

So, the axis of symmetry is $x = 1$ and the vertex is $(1, -4)$. Draw a parabola through the vertex and the points where the x-intercepts occur.



48. Identify the x-intercepts. The x-intercepts are $p = 5$ and $q = 1$, so the parabola passes through the points $(5, 0)$ and $(1, 0)$. Find the coordinates of the vertex.

$$x = \frac{p + q}{2} = \frac{5 + 1}{2} = 3$$

$$f(3) = 2(3 - 5)(3 - 1) = -8$$

So, the axis of symmetry is $x = 3$ and the vertex is $(3, -8)$. Draw a parabola through the vertex and the points where the x-intercepts occur.