

Chapter 4 Warm-Up

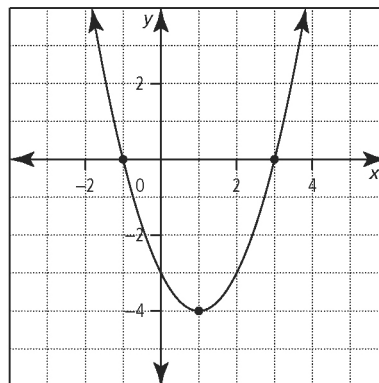
Section 4.1 Warm-Up

- Quadratic functions are represented by $f(x) = 2x^2 - x + 3$ and $g(x) = 2(x-3)^2 + 7$.
 - What is the value of $f(-4)$?
 - Determine $g(2)$.
 - What is $g(5) - f(0)$?
- Complete the table of values for the quadratic function $f(x) = -3x^2 + 6x - 1$. Then, answer the questions below.

x	-2	-1	0	1	2	3	4
$f(x)$							

- What is the equation for the axis of symmetry?
 - What is the maximum value of this function?
 - How could symmetry help you complete the table of values if you knew the equation for the axis of symmetry?
- Sketch a graph of each quadratic equation. Determine the coordinates of the vertex and the number of real x -intercepts for each graph.
 - $y = (x-3)^2 + 2$
 - $y = -2(x+1)^2 + 5$
 - $y = 3(x+2)^2$

- Use the graph to help answer the following questions:



- What is the equation for the axis of symmetry?
 - What are the coordinates of the vertex?
 - Determine the x -intercepts for the curve.
 - If the equation for the function is written in the form $y = ax^2 + bx + c$, what can you say for certain about the coefficient a ?
- Sketch a parabola that satisfies each set of information.
 - vertex at $(-1, 2)$ and y -intercept of -3
 - Equation of axis of symmetry is $x = 4$. Vertex is below the x -axis and the parabola opens upward.
 - vertex at $(0, 2)$ and has no x -intercepts

Section 4.2 Warm-Up

- Multiply and combine like terms.
 - $(x-4)(x+3)$
 - $5x(2x-5) - 3x(1-x)$
 - $(3x-7)(2x+1)$
 - $(2x-3)^2$
 - $(2x-7)(2x+7)$
- The dimensions of a rectangle are given as $x+5$ and $2x-3$, in centimetres. Determine a simplified expression for
 - the perimeter of the rectangle
 - the area of the rectangle
- Solve each equation for the variable x .
 - $5(x-3) - 2(4x-1) = 5$
 - $(2x-5)(x+3) = 2(x-3)(x+3)$
- Factor each trinomial.
 - $x^2 + 4x - 21$
 - $x^2 + 7x + 10$
 - $2x^2 - 7x + 6$
 - $4x^2 + 11x - 3$
- Factor each expression fully.
 - $-3x^2 + 9xy - 6y^2$
 - $-4x^2 + 49$
 - $2x^2 - 12x + 18$
 - $3x^3 - 3x^2 + 27x$
 - $x^4 - 16$



Section 4.3 Warm-Up

- Answer the following questions using your knowledge of square roots.
 - Is a decimal value of $\sqrt{12}$ considered exact or approximate?
 - What is the value of $\sqrt{28}$ correct to three decimal places?
 - How many solutions does the equation $x^2 = 9$ have?
 - What two whole numbers does $\sqrt{19}$ fall between?
 - What is the solution for the equation $4x = \sqrt{36x} - 2x$?
- Solve each quadratic equation.
 - $x^2 - 36 = 0$
 - $3x^2 - 12 = 0$
 - $\frac{1}{4}y^2 - 1 = 24$
 - $(x - 3)^2 = 81$
 - $(2p - 1)^2 + 4 = 53$
- Write each equation in the form $ax^2 + bx + c = 0$, where a , b , and c are integers and $a \neq 0$.
 - $(2x - 5)(x - 1) = 0$
 - $3(x - 4)^2 = -5$
 - roots are 2 and -3
 - roots are $\frac{2}{3}$ and -2
- What number must be added to each expression to create a perfect square trinomial?
 - $x^2 - 8x$
 - $m^2 + 24m$
 - $y^2 - 3y$
 - $n^2 - \frac{2}{3}n$
- Solve the equation $(x + 2)^2 - (x + 2) = 42$ using two different algebraic methods.

Section 4.4 Warm-Up

- Two quadratic functions are defined by $f(x) = -2(x + 3)^2 + 1$ and $g(x) = 3x^2 + 6x + 1$.
 - Express function g in the form $g(x) = a(x - p)^2 + q$.
 - In a graph of the functions, which parabola's vertex will be closest to the x -axis?
 - Which parabola has a y -intercept of 1?
 - What is the range of function f ?
 - Express function f in the form $f(x) = ax^2 + bx + c$.
 - What is the equation of the axis of symmetry for function g ?
 - Sketch the graph of function f .
- Solve each quadratic equation by completing the square. Express answers to the nearest tenth.
 - $x^2 - 8x + 13 = 0$
 - $-3x^2 + 4x = -5$
- Rewrite each quadratic equation in the form $ax^2 + bx + c = 0$. Then, identify the numerical values of a , b , and c in each case.
 - $\frac{3}{4}x^2 = 1 - 6x$
 - $-(x - 2)^2 = 5$
- Solve each quadratic equation using different methods.
 - $x^2 + 6x - 4 = 0$
 - $2x^2 + x - 6 = 0$
 - $x^2 - 8x + 15 = 0$

