



Vocabulary: Quadratics in Polynomial Form



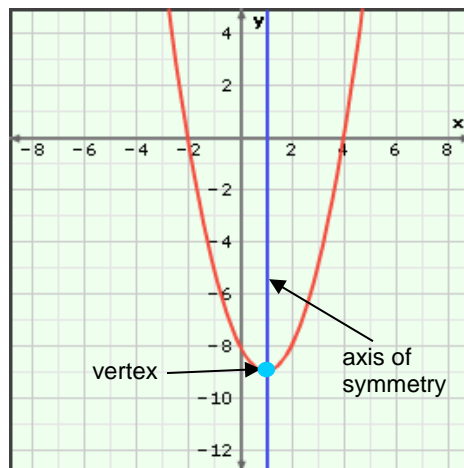
Vocabulary

- Axis of symmetry – a line that divides a shape into two parts that are mirror images of each other.

- The axis of symmetry of a parabola goes through the vertex of the parabola.
- The equation of the axis of symmetry of the graph of $y = ax^2 + bx + c$, where $a \neq 0$, is $x = \frac{-b}{2a}$.

- For example, the equation of the axis of symmetry of $y = x^2 - 2x - 8$ (shown to the right) is:

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



- Parabola – the graph of a quadratic function.
 - For example, the graph of $y = x^2 - 2x - 8$ (shown above) is a parabola.
- Quadratic function – a function of the form $y = ax^2 + bx + c$, where $a \neq 0$.
 - The “ $a \neq 0$ ” part is necessary because, if $a = 0$, the function becomes $y = bx + c$, which is linear.
 - The graph of a quadratic function is always a parabola.
- Vertex of a parabola – the point that is the maximum or minimum of a parabola.
 - The vertex is the *minimum* when the parabola opens up, and it is the *maximum* when the parabola opens down.
 - The vertex always lies on the axis of symmetry.
 - For example, the vertex of $y = x^2 - 2x - 8$ (graph shown above) is $(1, -9)$:

$$\begin{aligned} y &= x^2 - 2x - 8 \\ y &= (1)^2 - 2(1) - 8 \\ &= 1 - 2 - 8 \\ &= -9 \end{aligned}$$

