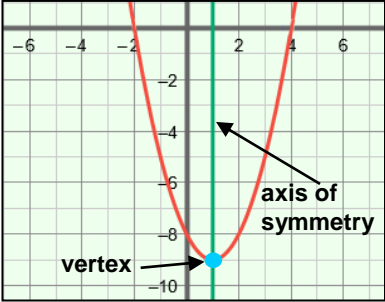




## Vocabulary: Roots of a Quadratic



### 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  $x = \frac{-b}{2a}$ .
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- Complex number – a number written as  $a + bi$ , where  $a$  and  $b$  are real numbers and  $i$  is the square root of  $-1$ .
    - The value  $a$  is the real part of a complex number, and  $bi$  is the imaginary part.
      - For example, the real part of  $2 + 3i$  is 2, and the imaginary part is  $3i$ .
  - Conjugates – a pair of binomials with the same first term and opposite second terms.
    - For example,  $2 + 3i$  and  $2 - 3i$  are conjugates.
  - Discriminant – the part of the quadratic formula that is under the radical,  $b^2 - 4ac$ .
  - Imaginary number – any number that can be written in the form  $bi$ , where  $b$  is a real number not equal to zero and  $i$  is the square root of  $-1$ .
    - For example,  $\sqrt{-16} = \sqrt{16} \cdot \sqrt{-1} = 4i$ .
  - Parabola – the graph of a quadratic function.
    - For example, the graph of  $y = x^2 - 2x - 8$  (shown above) is a parabola.
  - Quadratic equation – an equation of the form  $ax^2 + bx + c = 0$ , where  $a \neq 0$ .
  - Quadratic formula – a formula that can be used to find the roots of a quadratic equation of the form  $ax^2 + bx + c = 0$ .
    - The quadratic formula is  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ .
  - Quadratic function – a function of the form  $y = ax^2 + bx + c$ , where  $a \neq 0$ .
    - The “ $a$ ” cannot be 0 because, if  $a = 0$ , the function becomes linear:  $y = bx + c$ .
    - The graph of a quadratic function is always a parabola.
  - Root of an equation – a quantity that makes the related function equal to 0.

