

# Standard Form, Vertex Form, and Factoring Review

$$ax^2 + bx + c$$

1. Find the following for the quadratic  $y = -3x^2 + 2x + 4$ .

Vertex form:

a) The maximum or minimum value.

$$Y \text{ value: } 4.3$$

You can find  
~~Y value~~ as the  
vertex on calculator  
or by hand:

$$y = a(x - h)^2 + k$$

Standard form:

$$y = ax^2 + bx + c$$

x max/min value:

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

b) The axis of symmetry

$$x = 0.33$$

c) The vertex

$$(0.33, 4.33)$$

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

$$y = -3\left(\frac{1}{3}\right)^2 + 2\left(\frac{1}{3}\right) + 4 = 4.33$$

d) The range

$$y \leq 4.3$$

e) Rewrite the equation in vertex form

$$y = -3(x - 0.33)^2 + 4.33$$

2. Find the following for the quadratic  $y = x^2 + 5$ .

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

a) The maximum or minimum value.

$$5$$

$$y = (0)^2 + 5 = 5$$

b) The axis of symmetry

$$x = 0$$

c) The vertex

$$(0, 5)$$

d) The range

$$y \geq 5$$

e) Rewrite the equation in vertex form

$$y = 1(x - 0)^2 + 5$$

simplifies to:

$$y = x^2 + 5$$