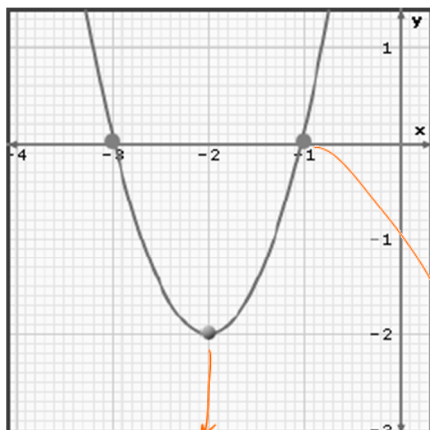


DAY 4 – Creating an Equation in Vertex Form

1. State the equation for each of the following parabolas.

a.

vertex = $(-2, -2)$ Point = $(-1, 0)$

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

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

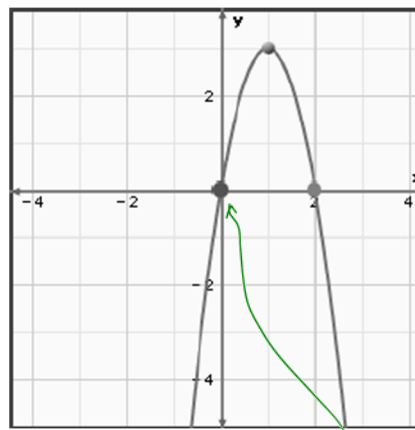
$$0 = a(-1+2)^2 - 2$$

$$2 = 1a$$

$$2 = a$$

$$\therefore y = 2(x+2)^2 - 2$$

b.

vertex = $(1, 3)$ point = $(0, 0)$

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

$$y = a(x-1)^2 + 3$$

$$0 = a(0-1)^2 + 3$$

$$-3 = 1a$$

$$-3 = a$$

$$\therefore y = -3(x-1)^2 + 3$$

- c. A parabola has a vertex
- $(5, 2)$
- and passes through the point
- $(1, 4)$
- .

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

$$y = a(x-5)^2 + 2$$

$$4 = a(1-5)^2 + 2$$

$$2 = 16a$$

$$\frac{1}{8} = a = 0.125$$

$$\therefore y = \frac{1}{8}(x-5)^2 + 2$$

- d. A parabola has a vertex
- $(-3, 6)$
- and a y-intercept of 1.

$$(0, 1)$$

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

$$y = a(x+3)^2 + 6$$

$$1 = a(0+3)^2 + 6$$

$$-5 = \frac{9}{9}a$$

$$-\frac{5}{9} = a$$

$$\therefore y = -\frac{5}{9}(x+3)^2 + 6$$