

Finding Equations of Parabolas

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

Find EQ of parabola w/ a vertex at $(-2, -4)$ and contains the point $(3, 2)$

$$y - (-4) = a(x - (-2))^2$$

$$y + 4 = a(x + 2)^2$$

$$2 + 4 = a(3 + 2)^2$$

$$6 = a(5)^2$$

$$\frac{6}{25} = a \cdot 25$$

$$a = \frac{6}{25}$$

$$y + 4 = \frac{6}{25}(x + 2)^2$$

$$V: (3, 4) \quad x\text{-int: } -6 \quad (-6, 0)$$

$$y - 4 = a(x - 3)^2$$

$$0 - 4 = a(-6 - 3)^2$$

$$-4 = a(-9)^2$$

$$\frac{-4}{81} = a$$

$$a = -\frac{4}{81}$$

$$y - 4 = -\frac{4}{81}(x - 3)^2$$

$v(1, -2)$ contains $(3, 6)$

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

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

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

$$8 = a \cdot (2)^2$$

$$\frac{8}{4} = \frac{a \cdot 4}{4}$$

$$a = 2$$

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

$$V(0,0) \quad (-3,6)$$

$$y-0=a(x-0)^2$$

$$y=ax^2$$

$$6=a(-3)^2$$

$$\frac{6=a \cdot 9}{9}$$

$$a = \frac{6}{9} = \frac{2}{3}$$

$$y = \frac{2}{3}x^2$$

your turn

1) $V(-2, 5)$ y-int: 3

2) $V(0, 0)$ contains $(-4, 5)$