

## Modeling with Quadratic Functions

Way back in lesson 1 of this chapter you learned how to graph a given quadratic function. In this lesson you will write quadratic functions when given information about their graphs.

Writing a Quad. Function in Vertex Form

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

Write a quadratic function for the parabola shown.  
(Standard Form)

$$1 = a(4-2)^2 - 3$$

$$1 = 4a - 3$$

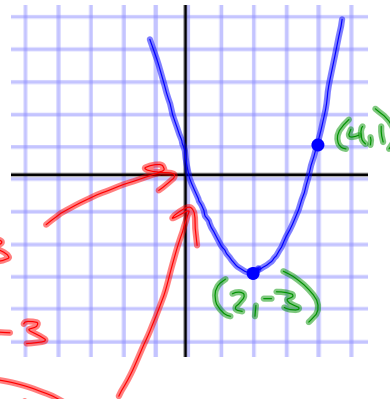
$$4 = 4a$$

$$1 = a$$

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

$$y = x^2 - 4x + 4 - 3$$

$$y = x^2 - 4x + 1$$



Writing a Quad. Function in Intercept Form

Intercept Form =  $y = a(x-p)(x-q)$

(Standard Form)

Write a quadratic function for the parabola shown.

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

$$2 = a(1)(-4)$$

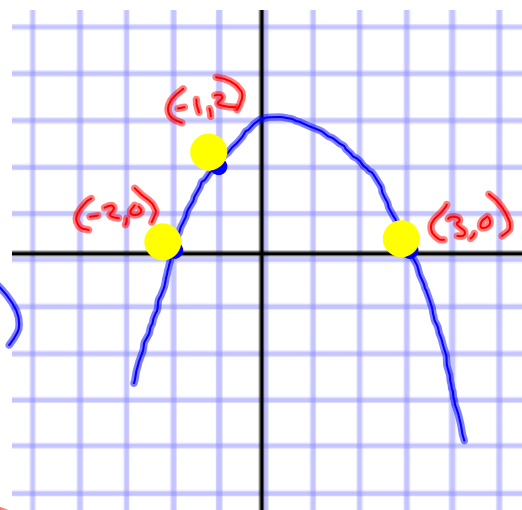
$$2 = -4a$$

$$-\frac{1}{2} = a$$

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

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

$$y = -\frac{1}{2}x^2 + \frac{1}{2}x + 3$$



Assignment:

p. 309

# 8, 10, 12,  
16, 20, 22