Chapter 2 Review

2.1 - Transformations of Quadratic Functions

Determine transformations

$y - 1 = -3(-x + 4)^2$

1) Right 4
2) Vertical Stretch 3
3) Reflect x-axis
4) Up 1

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

1) Left 2
2) Vertical Stretch 9
3) Reflect x-axis
4) Down 2

2.1 - Transformations of Quadratic Functions

Determine the quadratic equation

1) Horizontal shrink by 1/3
2) Left 2
3) Reflect x-axis
4) Down 3

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

2.2 - Characteristics of Quadratic Functions

Find Vertex and Axis of Symmetry (AOS)

$y = 3x^2 - 2x + 5$

$V : \left(\frac{1}{3}, \frac{14}{3}\right)$

$AOS : x = \frac{1}{3}$

$y + 18x^2 + 72x + 64 = 0$

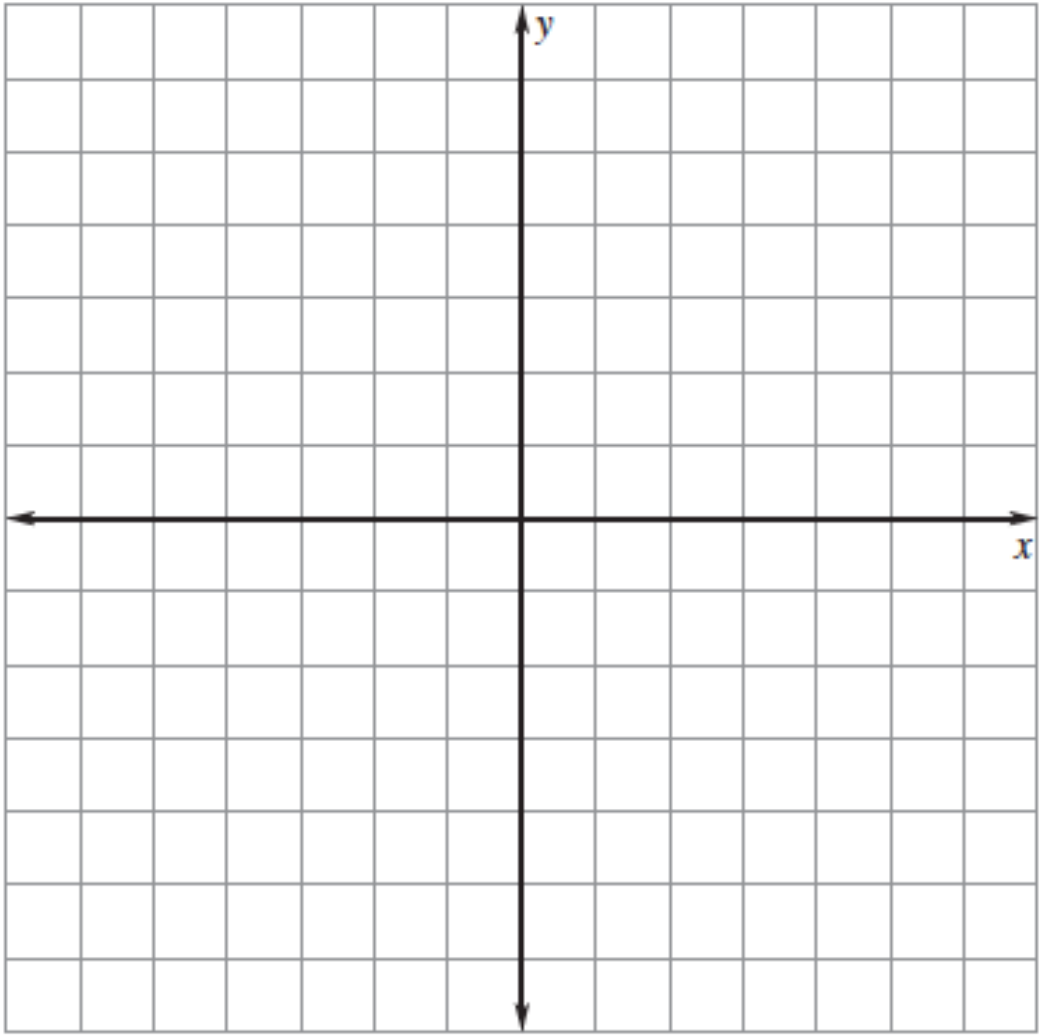
$V : (-2, 8)$

$AOS : x = -2$

2.2 - Characteristics of Quadratic Functions

Graph the function $f(x) = 2(x+5)^2 - 3$

Label the vertex,
axis of symmetry,
focus, and directrix.



2.2 - Characteristics of Quadratic Functions

Practice - Write a quadratic function, curves up or down

1. Vertex (2, -3)
   passes through (-1, 33)

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

2. Vertex (-3, 1)
   passes through (0, -8)

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

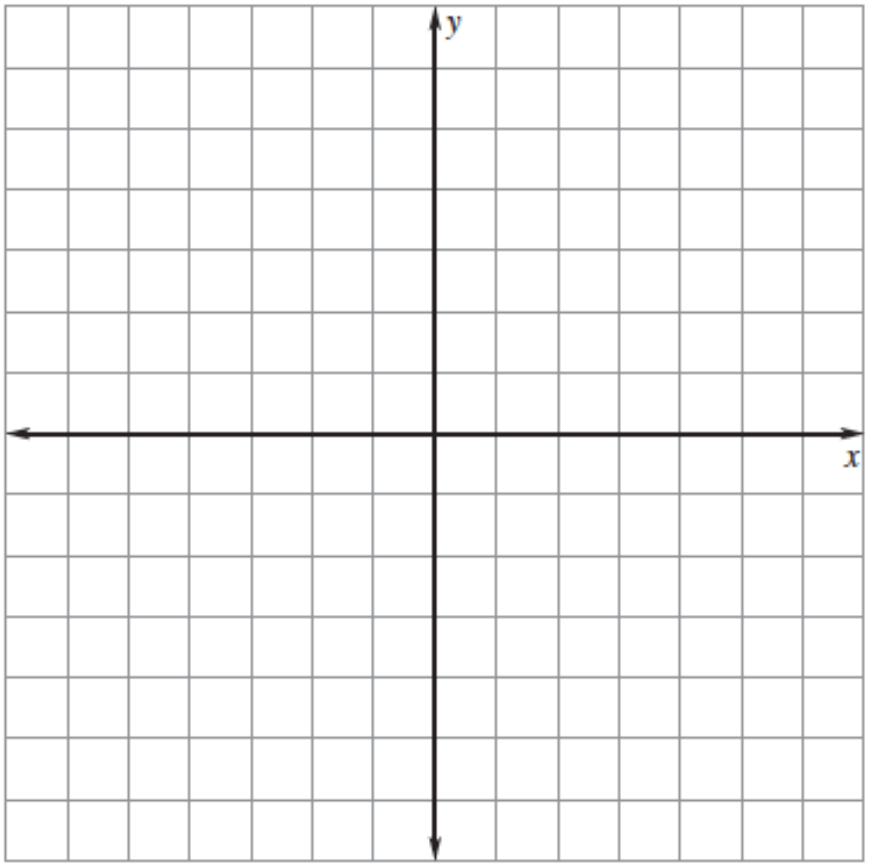
2.3 - Focus of a Parabola

Find equation of the parabola

$F : (5,1) \quad D : x = -3$

$$y - k = \frac{1}{4p}(x - h)^2$$

$$x - 1 = \frac{1}{16}(y - 1)^2$$

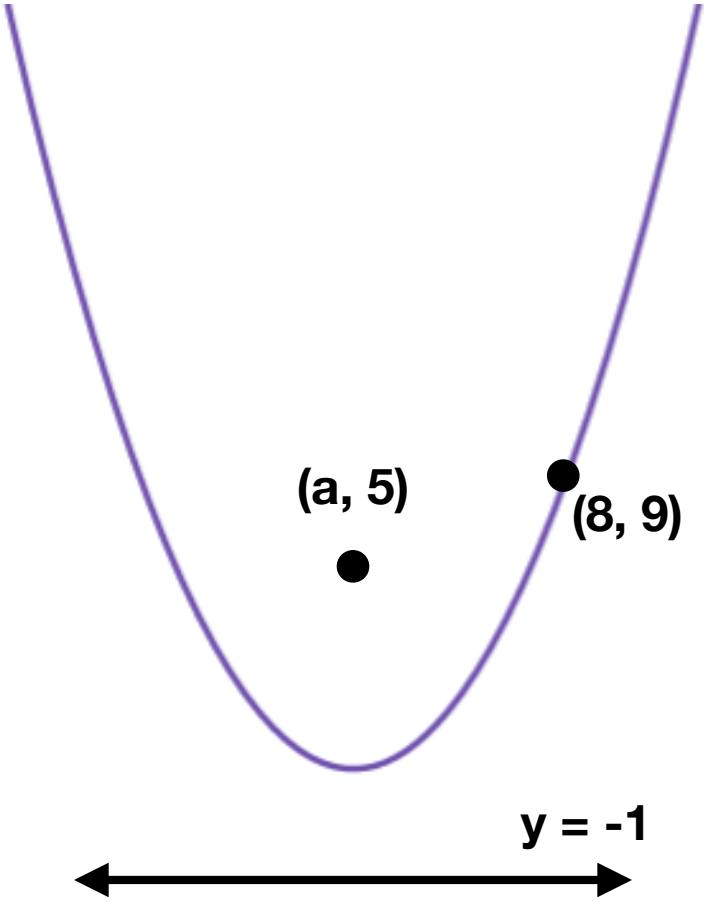


2.4 - Modeling with Quadratic Functions

Focus (a, 5); Point on Parabola (8, 9); Directrix y = -1

Find a, the Vertex and the equation.

$$y = \frac{1}{12}(x + 1.165)^2 + 2$$



2.4 - Modeling with Quadratic Functions

Given the following information, find b. $y = 2x^2 + 4x + b$

Directrix y = 3

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

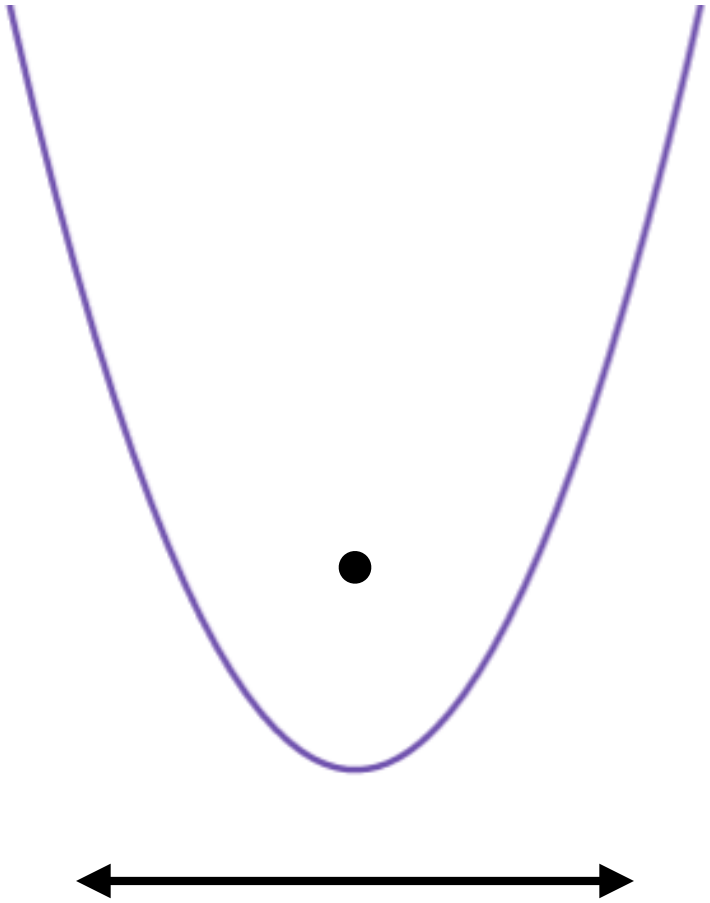
$$y - b + 2 = 2(x + 1)^2$$

$$\frac{1}{4p} = 2$$

$$p = \frac{1}{8} \qquad V(-1, 3\frac{1}{8})$$

$$b - 2 = 3\frac{1}{8}$$

$$y = 2x^2 + 4x + \frac{41}{8}$$



2.4 - Modeling with Quadratic Functions

Find the directrix.

$D: \; x \approx 4.09$