



Chapter 8 Review

Identify the Focus

$$1. x^2 - 4$$

$$\frac{1}{4(1)} - 4 = -3\frac{3}{4}$$

$$(0, -3.75)$$

2. The middle portion of a ski run travels along a parabolic path. When a skier is at the vertex of the path, the focus is 40 feet above it. Write an equation that represents the path of the skier. Assume that the focus is on the positive y -axis and the vertex is $(0,0)$.

Focus: $(0,40)$

$$\frac{1}{4a} = 40$$

$$1 = 160a$$

$$\frac{1}{160} = a$$

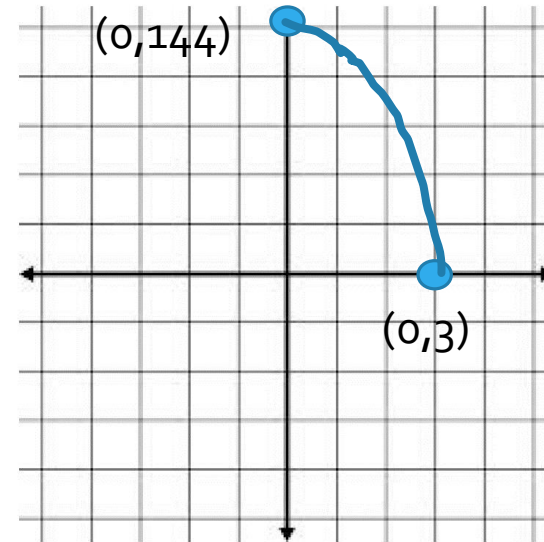
$$y = \frac{1}{160}x^2$$

3. An egg is dropped from a height of 144 feet. The function $f(t) = -16t^2 + 144$ gives the height of the egg after t seconds.

a. Graph the function.

Vertex is $(0,144)$

Zero located at 3



b. When does the egg hit the ground? *3 seconds to hit the ground*

$$0 = -16t^2 + 144$$

$$0 = -16(t^2 - 9)$$

$$0 = (t^2 - 9)$$

$$0 = (t - 3)(t + 3)$$

$$t = 3 \text{ or } t = -3$$