

## Activity 2: Projectile Motion

It can be shown that after being thrown straight up into the air with a velocity of 80 ft/sec, a ball's height  $t$  seconds after being thrown can be represented by  $h = -16t^2 + 80t$  (ignoring air resistance).

1. Find an appropriate viewing window for  $h = -16t^2 + 80t$  for this problem situation. Sketch the graph. Justify your window choice.

2. How high is the ball after 2 seconds?

Graphically

With a Table

3. When was the ball 64 feet above the ground?

Graphically

With a Table

4. When did the ball hit the ground?

Graphically

With a Table

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5. What is the maximum height that the ball reached?

Graphically

With a Table

6. The ball was thrown from a height of 0 ft. In Exercise 4, you found that the ball hit the ground, height = 0, at \_\_\_\_\_ sec.
- Based on this information, how can you find the time at which the ball reached its maximum height? Explain your strategy.
  - Evaluate the function to find the maximum height.
  - What is this point (time, maximum height) called on the parabola,  $h = -16t^2 + 80t$ ?