

## 2-7 Videos Guide

### 2-7

Exercises:

- If a ball is thrown vertically upward with a velocity of 80 ft/s, then its height after  $t$  seconds is  $s = 80t - 16t^2$ .
  - (a) What is the maximum height reached by the ball?
  - (b) What is the velocity of the ball when it is 96 ft above the ground on its way up? On its way down?
- If a tank holds 5000 gallons of water, which drains from the bottom of the tank in 40 minutes, then Torricelli's Law gives the volume  $V$  of water remaining in the tank after  $t$  minutes as

$$V = 5000 \left(1 - \frac{1}{40}t\right)^2 \quad 0 \leq t \leq 40$$

Find the rate at which the water is draining from the tank after (a) 5 min, (b) 10 min, (c) 20 min, and (d) 40 min. At what time is the water flowing out the fastest? The slowest? Summarize your findings.