Solution

a. $\Delta d = d_3 - d_0 = 144 - 0 = 144$ ft Using data from Table 1.

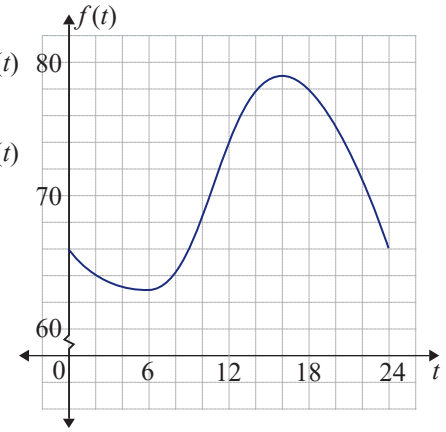
b. $\dfrac{\Delta d}{\Delta t} = \dfrac{144 \text{ ft}}{3 \text{ sec}} = 48 \dfrac{\text{ft}}{\text{sec}}$ Using $\Delta t = t_3 - t_0 = 3 - 0 = 3$ sec.

c. We do not know how fast the ball is traveling when $t = 3$ seconds. This is a question of instantaneous velocity, which we will discuss later.

10.5 EXERCISES

PRACTICE

Use the graph to solve Exercises 1–2. The variable t is the number of hours since midnight and $f(t)$ is the temperature at time t.



1. What is the average rate of change of $f(t)$ from $t = 0$ to $t = 2$?

2. What is the average rate of change of $f(t)$ from $t = 6$ to $t = 12$?

In Exercises 3–10, find the average rate of change of the given functions between the given values of x_1 and x_2.

3. $f(x) = 5x + 3;\ x_1 = 1,\ x_2 = 3$

4. $f(x) = 3x + 8;\ x_1 = -2,\ x_2 = 1$

5. $f(x) = 2x^2 - x - 3;\ x_1 = 2,\ x_2 = 2.5$

6. $f(x) = 3x^2 - 2x - 1;\ x_1 = 1,\ x_2 = 1.5$

7. $f(x) = \dfrac{-2}{2x - 1};\ x_1 = 3,\ x_2 = 3.5$

8. $f(x) = \dfrac{2}{3x + 2};\ x_1 = 0.5,\ x_2 = 1$

9. $f(x) = \sqrt{x};\ x_1 = 1,\ x_2 = 2.5$

10. $f(x) = \sqrt{x - 3};\ x_1 = 4,\ x_2 = 4.44$