

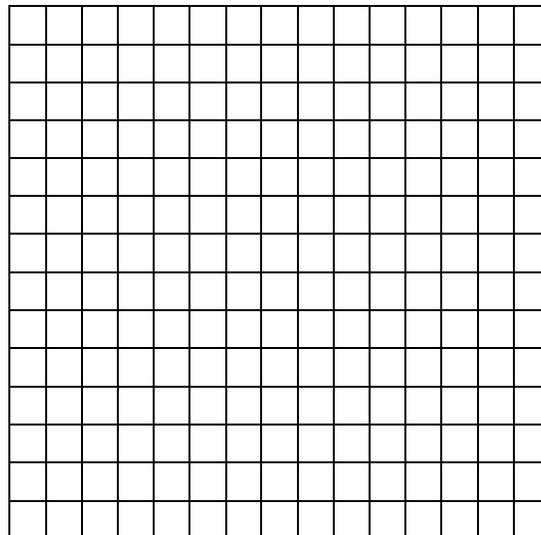
Notes 7.1 Graphing and Functions

1. The toll to a bridge costs \$2.00. If you use the bridge x times in a month, the monthly cost, y , is $y = 2x$. With a \$10 discount pass, the toll is reduced to \$1.00. The monthly cost, y , of using the bridge x times in a month with the discount pass is $y = 10 + x$.

a. Let $x = 0, 2, 4, 6, 8, 10,$ and 12 . Make tables of values showing seven solutions of $y = 2x$ and seven solutions of $y = 10 + x$.

$$y = 2x$$

$$y = 10 + x$$



b. Graph the equations in the same rectangular coordinate system.

c. What are the coordinates of the intersection point for the two graphs? Interpret the coordinates in practical terms.

Function

2. Find each of the following:

a. $f(6)$ for $f(x) = 4x + 5$

b. $g(-5)$ for $g(x) = 3x^2 - 10$

c. $h(4)$ for $h(x) = -x^2 - 7x + 2$

3. The function $f(x) = 0.0875x^2 - 0.4x + 66.6$ models a car's required stopping distance, $f(x)$, in feet, on dry pavement traveling at x miles per hour.

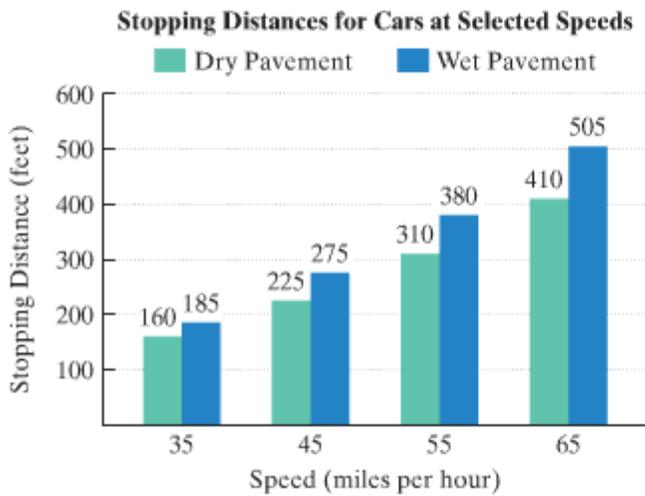


FIGURE 7.6

Source: National Highway Traffic Safety Administration

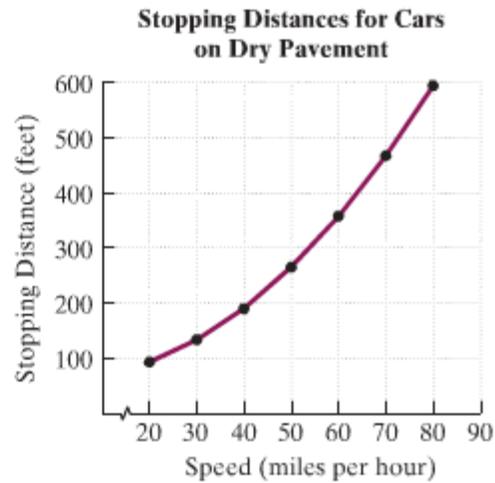


FIGURE 7.7

- a. Use the line graph in Figure 7.7 to estimate a car's required stopping distance at 40 miles per hour on dry pavement. Round to the nearest ten feet.

- b. Use the function $f(x) = 0.0875x^2 - 0.4x + 66.6$, to find the required stopping distance at 40 miles per hour. Round to the nearest foot.

4. Graph the following functions.

a. $y = 4 - x$

b. $f(x) = 4x^2 - 3$

c. $g(x) = -x^3 + 2$

d. $h(x) = |x| - 2$

5. Analyzing the Graph of a Function

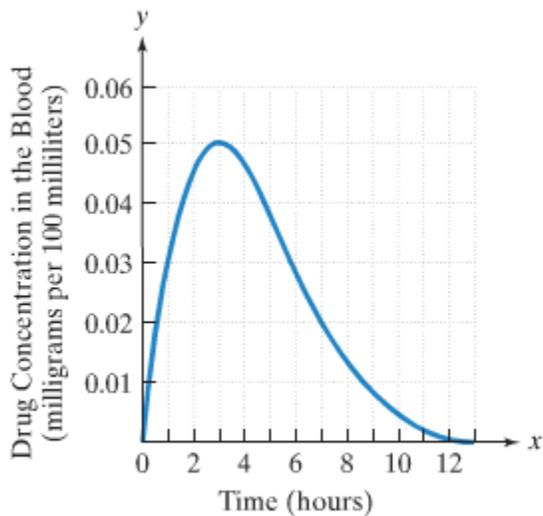


FIGURE 7.15

When a person receives a drug injected into a muscle, the concentration of the drug in the body, measured in milligrams per 100 milliliters, depends on the time elapsed after the injection, measured in hours. Figure 7.15 shows the graph of drug concentration over time, where x represents hours after the injection and y represents the drug concentration at time x .

- During which period of time is the drug concentration increasing?
- During which period of time is the drug concentration decreasing?
- What is the drug's maximum concentration and when does this occur?
- What happens by the end of 13 hours?
- Explain why the graph defines y as a function of x .