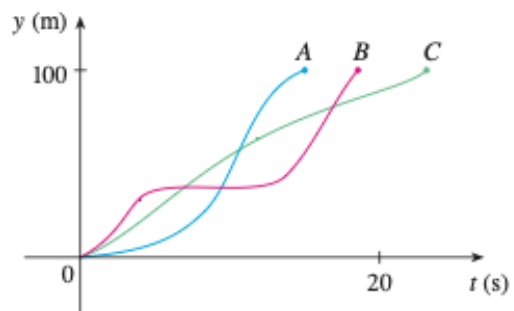


**Reading** Stewart §1.1 – 1.3. Also skim Appendices *A*, *B*, and *D* and review as needed.

**Note** Almost all of the problems below are drawn from our textbook, Stewart Calculus 8th edition, from the sections listed above. A useful study strategy is to find these questions in the textbook, and use other similar/nearby problems for additional practice. The answers to many of the textbook's problems can be found at the back of the book.

- Find an equation for the line passing through  $(-3, -5)$  with slope  $-\frac{7}{2}$ .
- A car leaves Detroit at 2:00 PM, traveling at a constant speed west along I-96. It passes Ann Arbor, 40mi from Detroit, at 2:50 PM.
  - Express the distance traveled in terms of the time elapsed.
  - Draw the graph of the equation in part (a).
  - What is the slope of this line? What does it represent?

- Three runners compete in a 100-meter race. The graph depicts the distance run as a function of time for each runner. Describe in words what the graph tells you about this race. Who won the race? Did each runner finish the race?



- Find the domain of the functions:

a)  $f(x) = \frac{2x^3 - 5}{x^2 + x - 6}$

b)  $f(t) = \sqrt[3]{2t - 1}$

- Evaluate  $f(-3)$ ,  $f(0)$  and  $f(2)$  for the following piecewise function. Sketch the graph of  $f$ .

$$f(x) = \begin{cases} 3 - \frac{1}{2}x & \text{if } x < 2 \\ 2x - 5 & \text{if } x \geq 2 \end{cases}$$

- A rectangle of length  $x$  and width  $y$  has perimeter 20.

- Write  $y$  as a function of  $x$ . That is, find a function  $f(x)$  so that  $y = f(x)$ .
- Given the context, what is the domain of this function?

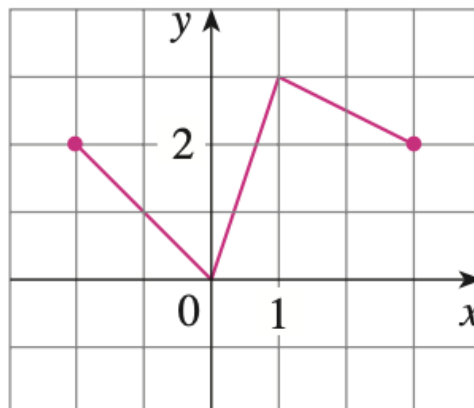
7. The graph of  $f$  is given. Draw the graphs of the following functions.

(a)  $y = f(x) - 3$

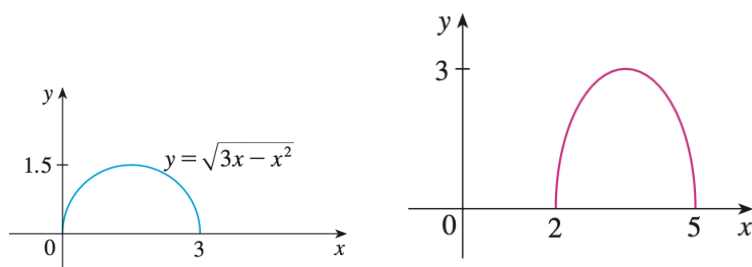
(b)  $y = f(x + 1)$

(c)  $y = \frac{1}{2}f(x)$

(d)  $y = -f(x)$



8. Shown on the left is the graph of the function  $y = \sqrt{3x - x^2}$ . Use transformations to create a function whose graph is as shown on the right.



9. Graph the function by hand, not by plotting points, but by starting with the graph of one of the standard functions given in Section 1.2, and then applying the appropriate transformations.

a)  $y = (x - 3)^2$

b)  $y = 1 - \frac{1}{x}$

c)  $y = 2 \cos(3x)$

d)  $y = y = 2\sqrt{x + 1}$

10. Use the table to evaluate each expression.

a)  $f(g(1))$

b)  $g(f(1))$

c)  $f(f(1))$

d)  $g(g(1))$

e)  $(g \circ f)(3)$

f)  $(f \circ g)(6)$

$x$	1	2	3	4	5	6
$f(x)$	3	1	4	2	2	5
$g(x)$	6	3	2	1	2	3