Practice Problems

These problems are not to be handed in, but try them first.

- From Chapter 1 Review (pages 40–42): 1–4, 11–13, 28&29, 36&37;
- From Chapter 2 Review (pages 120–124): 5–9, 13–16 (use a calculator), 17, 47–50, 88.A&B, 90.A&B.

The answers to these should be in the back of your textbook.

Due Problems

These problems are due October 9 Tuesday.

1 *Solve the equation*

$$S = 2A + ph$$

for h. (Show at least one intermediate step.)

$$\begin{aligned} S &= 2A + ph; \\ S - 2A &= ph; \\ h &= \frac{S - 2A}{p}. \end{aligned}$$

2 *Given that*

$$f(x) = 2x + 3$$

for all x, find $f(3) - f(-1)$. (Show at least one intermediate step.)

$$f(3) - f(-1) = (2(3) + 3) - (2(-1) + 3) = 8.$$

Or

$$\begin{aligned} f(3) &= 2(3) + 3 = 9; \\ f(-1) &= 2(-1) + 3 = 1; \\ f(3) - f(-1) &= (9) - (1) = 8. \end{aligned}$$

3 *A 30-foot ladder is leaning diagonally against the side of a building. (The walls of the building are vertical, and the ground is horizontal.) Let x be the distance along the ground from the base of the ladder to the building, and let y be the height above the ground at which the ladder reaches the building, both in feet.*

a. *Write down an equation relating x and y in this situation.*

Using the Pythagorean Theorem,

$$x^2 + y^2 = 30^2,$$

or

$$x^2 + y^2 = 900.$$

b. *What are the largest and smallest values that x and y can possibly take?*

Since x and y are lengths, we need $x \geq 0$ and $y \geq 0$. Since $x \geq 0$,

$$\begin{aligned} x^2 + y^2 &= 900; \\ (0)^2 + y^2 &\leq 900; \\ y^2 &\leq 900; \\ y &\leq 30. \end{aligned}$$

Similarly, since $y \geq 0$, $x \leq 30$. Therefore,

$$\begin{aligned} 0 \leq x \leq 30, \\ 0 \leq y \leq 30. \end{aligned}$$