## Some Modeling

- 1. A company manufactures widgets. Fixed daily costs are \$2000 and it costs \$1.5 to produce each widget.
  - (a) Write the average cost  $\overline{C}$  of producing x widets.
  - (b) Find and interpret  $\overline{C}(100)$  and  $\overline{C}(500)$ .

- 2. The printing and binding cost for a college algebra book is \$10. The editorial cost of \$200,000. The first 2500 books are samples and are given free to professors.
  - (a) Write a function f describing the average cost of salable books.
  - (b) Find the average cost of a saleable book if 10,000 books are produced.
  - (c) How many books must be produced to bring the average cost of a salable book under \$20?
  - (d) Find the vertical asymptote of the graph of y = f(x). How does it relate to this situation?

- 3. A square piece of a tin 18 inches on each side is to be make into a box, without a top, but cutting a square from each corner and folding up the flaps to corm the sides.
  - (a) Draw a picture of the situation.
  - (b) Find the volume v of the box as a function of the length of the squares removed from the corners.
  - (c) Use technology to find the size to cut the corners so that the volume of the box is 432 cubic inches?