## 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 $\bar{C}$ of producing $x$ widets.
(b) Find and interpret $\bar{C}(100)$ and $\bar{C}(500)$.
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?
