

#### Lesson 7.4

1. A cylindrical can with no top must be constructed using  $300 \text{ in}^2$  of material. Find the height and radius of the can having the greatest volume.
2. A fenced-in garden is to be laid out in a rectangular area and partitioned into two sections with fencing parallel to one side. The fencing for the perimeter costs \$10 per foot, while the fencing for the partition costs \$5 per foot. Find the largest area that can be enclosed for a cost of \$500.
3. A window consisting of a rectangle topped by a semicircle is to have a perimeter of 20 feet. Find the radius of the semicircle that maximizes the area of the window.