Personal Tutors
Chapter 10

Personal Tutor 10.1 — Volume of a Composite Figure

1. **Apply** A right cylindrical container has a height of four feet and a radius of 18 inches. This empty container will be topped with a hemispherical lid. The lid must match the container exactly to insure a tight seal. The lid will have a small hole at the top to allow for insertion of the material being stored. Once the two pieces have been put together, the engineer will have to fill the container with a product that will completely fill the base as well as the inside of the lid. Find the volume of the container to determine how much of the material may be stored.

2. **Starting Hint** Use the volume equations for a right cylinder and a hemisphere. Write out the equations first, and then write the numbers you know underneath each part.

Personal Tutor 10.2 — Use Areas of Circles to Solve Problems

1. **Apply** A manufacturing engineer is creating a special nut to use on a bolt. This nut must be circular with a circular hole through which the bolt will be placed. The bolt has a radius of 0.75 inches. The maximum area of the nut may be approximately 27 in^2. Determine the maximum radius of the circle of the nut.

2. **Starting Hint** Write out the equation first, and then write the numbers you know underneath each part.