In Exercises 1–4, use the slice method to find the volume of the indicated solid.

1. The solid in Fig. 9.1.15(a); each plane section is a circle of radius 1.

3. The solid in Fig. 9.1.15(c); the base is a figure of area A and the figure at height x has area $A_x = [(h - x)/h]^2 A$.

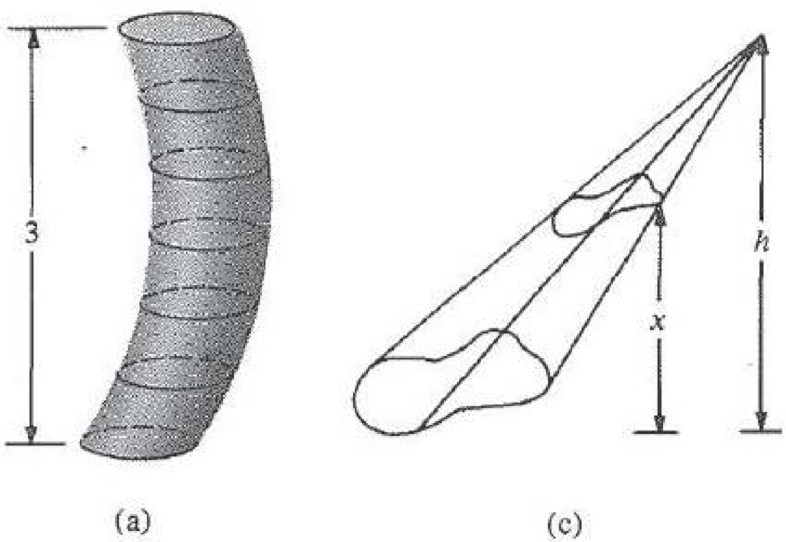

Figure 9.1.15. The solids for Exercises 1–4.

7. The base of a solid S is the disk in the xy plane with radius 1 and center $(0,0)$. Each section of S cut by a plane perpendicular to the x axis is an equilateral triangle. Find the volume of S.

8. A plastic container is to have the shape of a truncated pyramid with upper and lower bases being squares of side length 10 and 6 centimeters, respectively. How high should the container be to hold exactly one liter (= 1000 cubic centimeters)?

In Exercises 15-26, find the volume of the solid obtained by revolving each of the given regions about the x axis and sketch the region.

20. The region under the graph of $\sqrt{4 - 4x^2}$ on $[0, 1]$.

21. The semicircular region with center $(a, 0)$ and radius r (assume that $0 < r < a$, $y \geqslant 0$).

23. The square region with vertices $(4,6)$, $(5,6)$, $(5,7)$, and $(4,7)$.

★28. A right circular cone of base radius r and height 14 is to be cut into three equal pieces by parallel planes which are parallel to the base. Where should the cuts be made?