The region R is bounded by the curves

$$y = x^3 \qquad y = 8 \qquad x = 0$$

Sketch R. For the following rotational axes, **set-up** two integrals for the volume of the solid generated by revolving R about the indicated axis, one representing the washer method and one the cylindrical shells method.

(a) x-axis.

(b) y-axis.

(c) $y = 5$.

(d) $x = -2$.

The region R is bounded by the curves

$$y = 1 + \sin(x) \qquad y = 1 \qquad x = 0 \qquad x = 2$$

Sketch R. For the following rotational axes, **set-up** two integrals for the volume of the solid generated by revolving R about the indicated axis, one representing the washer method and one the cylindrical shells method.

(a) x-axis.

(b) y-axis.

(c) $y = -1$.

The triangular region with vertices $(0, 2)$, $(1, 0)$, and $(0, 1)$ is rotated about the line $x = 4$. Find the volume of the solid generated by this rotation.

Let B be the region bounded by the graphs of $x = y^2$ and $x = 9$. Sketch B. For each part below, find the volume of the solid that has B as its base if every cross section by a plane perpendicular to the x-axis is

(a) a square.

(b) a semicircle with diameter lying on B.

(c) an equilateral triangle.

Find the volume of a wedge cut out of a cylinder of radius r if the angle between the top and bottom of the wedge is $\frac{\pi}{6}$.