

§5.2 and §5.3 Volume with Disks and Shells

The region R is bounded by the curves

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

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

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

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 $\frac{\pi}{6}$.