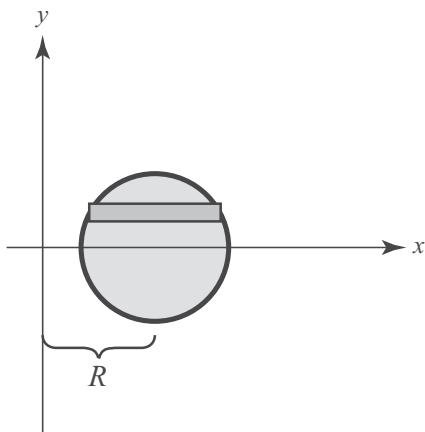


76. (a)  $(x - R)^2 + y^2 = r^2$

$$x = R \pm \sqrt{r^2 - y^2}$$

$$V = 2\pi \int_0^r \left( \left[ R + \sqrt{r^2 - y^2} \right]^2 - \left[ R - \sqrt{r^2 - y^2} \right]^2 \right) dy = 2\pi \int_0^r 4R\sqrt{r^2 - y^2} dy = 8\pi R \int_0^r \sqrt{r^2 - y^2} dy$$



(b)  $\int_0^r \sqrt{r^2 - y^2} dy$  is one-quarter of the area of a circle of radius  $r$ ,  $\frac{1}{4}\pi r^2$ .

$$V = 8\pi R \left( \frac{1}{4}\pi r^2 \right) = 2\pi^2 r^2 R$$