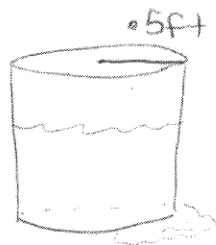


Practice Problems with Related Rates

P267 13, 25

EX Water is leaking out of a cylindrical tank, whose base is a circle of radius .5 ft, at the rate of .1 cubic feet per minute. Find dh/dt



$$V = \pi r^2 h = \pi \cdot .25 h$$

$$\frac{dV}{dt} = .25 \pi \frac{dh}{dt}$$

$$\frac{dV}{dt} = \text{Rate In} - \text{Rate Out} = -.1 \text{ ft}^3/\text{min}$$

$$\frac{-.1 \text{ ft}^3/\text{min}}{.25 \text{ ft}^2 \pi} = \frac{dh}{dt}$$

$$\boxed{-\frac{2}{5\pi} \text{ ft}/\text{min} = \frac{dh}{dt}}$$