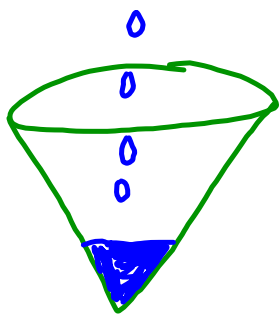


Related rates (2.7)

rates w/respect to time



changing

Volume : $\frac{dV}{dt}$

Area of circle : $\frac{dA}{dt}$

Weight : $\frac{dW}{dt}$

ex: A rock is dropped onto a pond forming ripples in the shape of concentric circles. The radius of the outer circle is increasing at a ~~rate of 2 ft/s~~. How fast is the area of the circle changing when $r = 4$ ft?

$$\frac{dr}{dt} = 2 \frac{\text{ft}}{\text{s}} \quad \frac{dA}{dt} = ? \quad \text{when } r = 4 \text{ ft.}$$

$$\frac{d}{dt} (A = \pi r^2)$$

$$\frac{dA}{dt} = 2\pi r \frac{dr}{dt} = 2\pi (4) (2) = 16\pi \frac{\text{ft}^2}{\text{s}}$$