

#(3) want speed = $\frac{dx}{dt}$
 $s = 10 \text{ mi.}$

$x \rightarrow \rightarrow$
 $\frac{ds}{dt} = 300 \text{ mi/hr}$

$$s^2 = x^2 + 7^2$$

$$2s \frac{ds}{dt} = 2x \frac{dx}{dt}$$

$$x^2 + 7^2 = 100$$

$$x^2 = 51$$

$$x = \sqrt{51}$$

$$\frac{dx}{dt} = \frac{s}{x} \cdot \frac{ds}{dt}$$

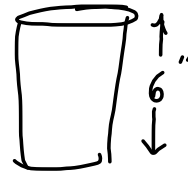
$$\frac{dx}{dt} = \frac{10}{x} \cdot 300$$

$$= \frac{3000}{\sqrt{51}} \text{ mi/hr.}$$

14 answer: 20 ft/sec

15

$$\frac{dr}{dt} = \frac{.001}{3} \text{ in/min}$$



$$d = 3.8 \text{ in}$$

$$(r = 1.9 \text{ in})$$

$$\text{Want } \frac{dV}{dt}$$

$$V = \pi r^2 h$$

$$V = 6\pi r^2$$

$$\frac{dV}{dt} = 6\pi \cdot 2r \cdot \frac{dr}{dt}$$

$$\frac{dV}{dt} = 12\pi r \frac{dr}{dt}$$

$$\frac{19\pi}{2500}$$

$$\approx 0.0239$$

$$\text{in}^3/\text{min}$$

plug in $\frac{\text{in}^3}{\text{min}}$