

FA #20 - Cone Problem

$$V = \frac{1}{3} \pi r^2 h$$

Replace r with 5h/14.

$$V = \frac{1}{3} \pi \left( \frac{5h}{14} \right)^2 h$$

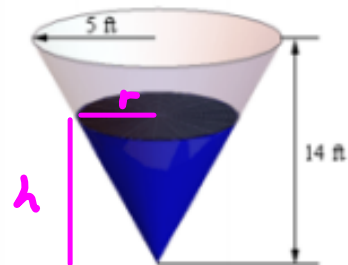
$$V = \frac{25}{588} \pi h^3$$

$$\frac{dV}{dt} = \frac{75}{588} \pi h^2 \frac{dh}{dt}$$

$$-2 = \frac{75}{588} \pi (6)^2 \frac{dh}{dt}$$

$$\frac{-1176}{900\pi} = \frac{dh}{dt}$$

$$-0.14 = \frac{dh}{dt}$$



$$\frac{r}{h} = \frac{5}{14}$$

$$r = \frac{5h}{14}$$

The depth of the water is decreasing at a rate of 0.14 ft/h.