

$$D^2 = (70t)^2 + 0.5^2$$

$$\frac{d}{dt} D^2 = \frac{d}{dt} [(70t)^2 + 0.5^2]$$

$$2D \frac{dD}{dt} = 9800t + 0$$

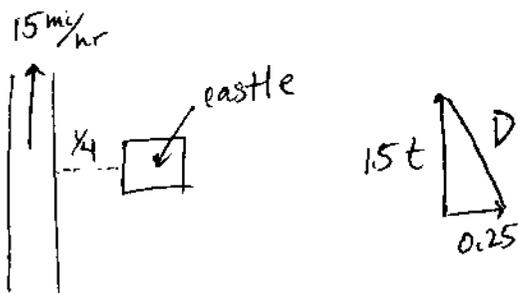
after 2 hours, $t = 2$

$$D = \sqrt{(70 \cdot 2)^2 + 0.5^2} = 140 \text{ mi}$$

$$2(140 \text{ mi}) \frac{dD}{dt} = 9800(2)$$

$$\frac{dD}{dt} = 70 \text{ mi/hr}$$

#10



$$D^2 = (0.25)^2 + (15t)^2$$

$$2D \frac{dD}{dt} = 0 + \frac{d}{dt} (15t)^2$$

$$2D \frac{dD}{dt} = 450t$$

we know $t = \frac{1}{3} \text{ hr}$

$$D = \sqrt{\left(\frac{1}{3} \cdot 15\right)^2 + (0.25)^2}$$

$$= 5.0 \text{ mi}$$

$$2(5) \frac{dD}{dt} = 450 \left(\frac{1}{3}\right)$$

$$\frac{dD}{dt} = 15 \text{ mi/hr}$$