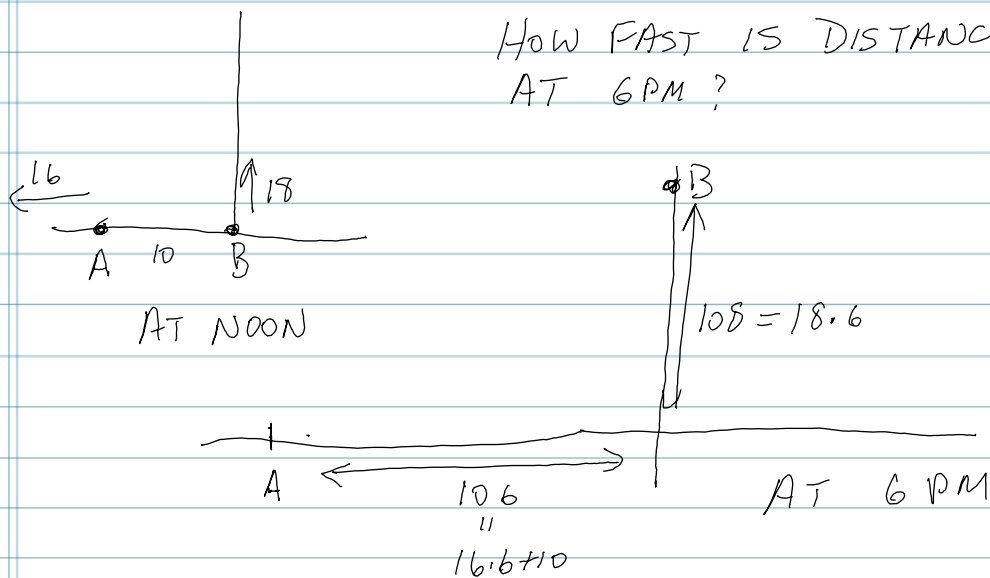
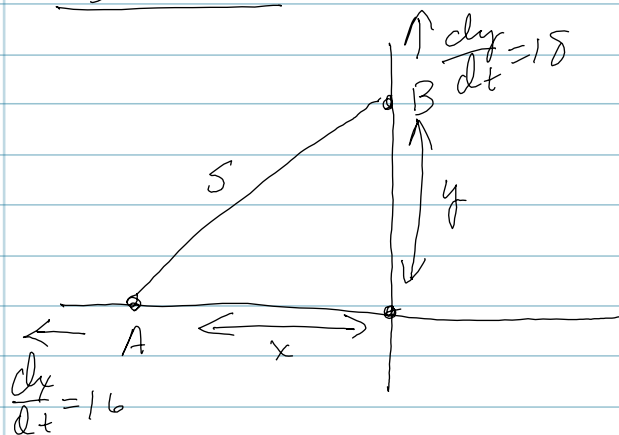


HW6 #8

How FAST IS DISTANCE CHANGING AT 6 PM?



GENERAL



Find $\frac{ds}{dt}$ at 6 PM

$$x^2 + y^2 = s^2$$

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

$$\frac{ds}{dt} = \frac{x \frac{dx}{dt} + y \frac{dy}{dt}}{s}$$

AT 6 PM

$$\frac{ds}{dt} = \frac{106 \cdot 16 + 108 \cdot 18}{\sqrt{106^2 + 108^2}} = 24.05379$$

OR

$$x = 10 + 16t$$

$$y = 18t$$

$$s = \sqrt{(10 + 16t)^2 + (18t)^2}$$

$$\frac{ds}{dt} \text{ at } t=6 \text{ is } 24.05379 \dots$$