shape =?

The number of gallons of water in a tank t minutes after the tank has started to drain is Q(t) = 200(30-t)^2 .

$V = \pi r^2 h$

a.) How fast is the water draining out at the end of ten minutes?

Slope

b.) What is the average rate at which the water flows out during the first ten minutes?

a) $Q(t) = 200(30-t)^2$

$\frac{dQ}{dt} = ?$

$Q'(t) = 200 \cdot 2(30-t) \cdot -1$

$Q'(t) = -400(30-t)$

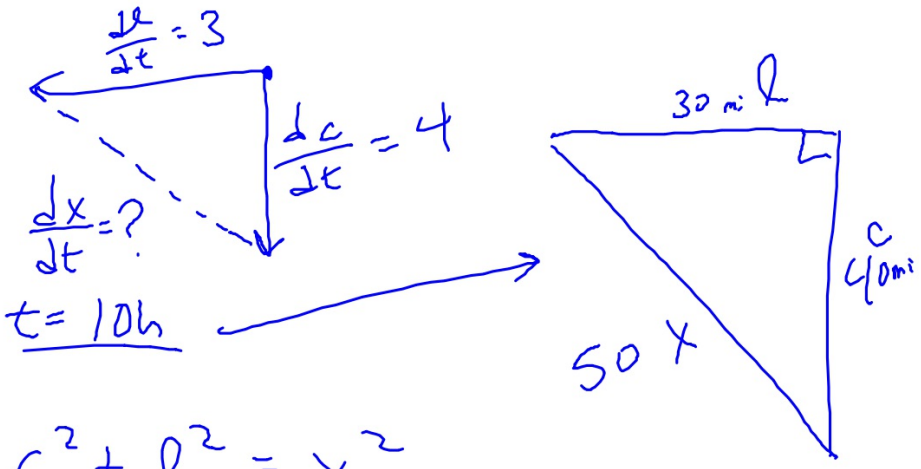
$Q'(10) = -400(20) = -8000$ gal/min

b)

$$\frac{y_2 - y_1}{x_2 - x_1}$$

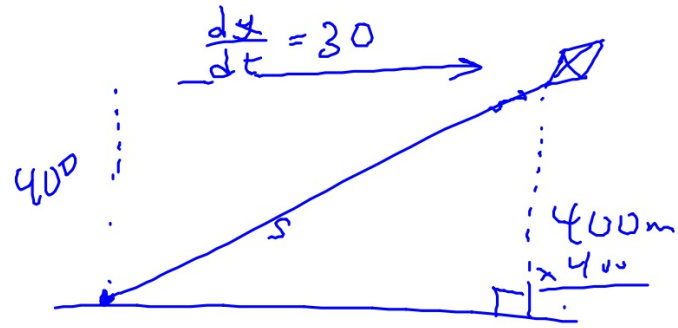
$$\frac{200(20)^2 - 200(30)^2}{10 - 0}$$

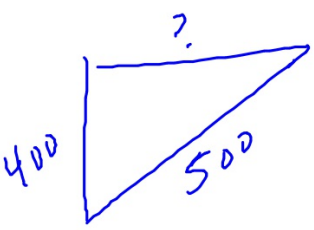
$$\frac{Q(10) - Q(0)}{10 - 0}$$



$$c^2 + l^2 = x^2$$

$$2c\frac{dc}{dt} + 2l\frac{dl}{dt} = 2x\frac{dx}{dt}$$





$\frac{ds}{dt} = ?$

$s = 500$ (m) away.

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

$x^2 + 160{,}000 = s^2$

$2x\frac{dx}{dt} + 0 = 2s\frac{ds}{dt}$

$x = 300$ ✓

$\frac{dx}{dt}$?

$\frac{ds}{dt}$?

For Friday: Choose 15 problems from this packet.

Excluding 36-41

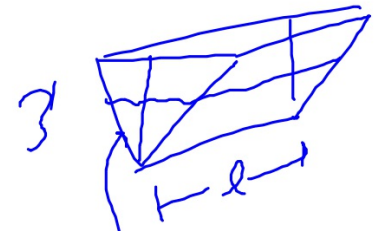
#18 #1-4.

#20

#42

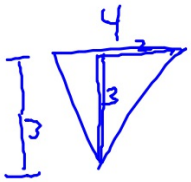
Show all set-up and work.

20)



$\frac{dV}{dt} = 2.5$ $\quad \frac{dh}{dt} = ?\Big|_{@\ h=2}$

$V = B \cdot h$



$\frac{h}{b} = \frac{3}{4}$

$V = \frac{1}{2} b \cdot h \cdot \ell$ (15)

$V = 7.5\, b \cdot h$

$V = 7.5 \cdot \frac{4}{3} h \cdot h$

$\frac{4h}{3} = \frac{3b}{3}$

$\frac{4}{3} h = b$