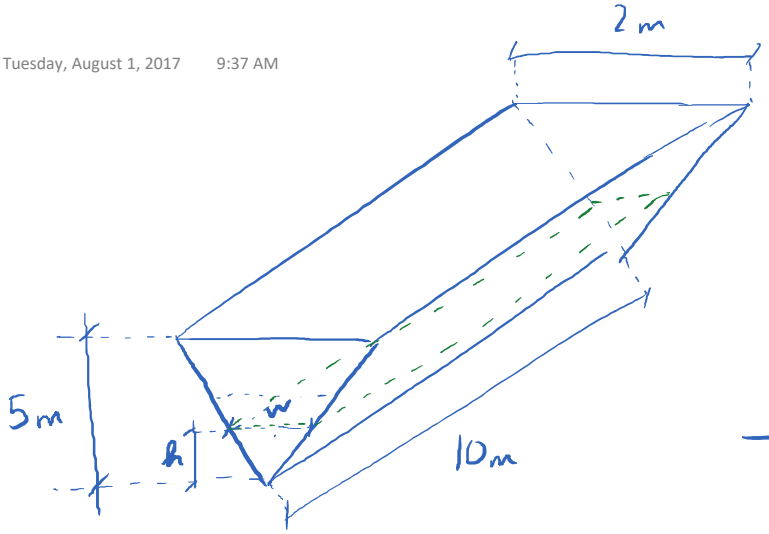
Tuesday, August 1, 2017 9:37 AM



Quantities changing

height : h

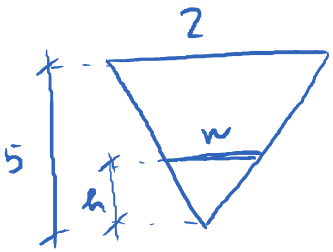
width : w

Volume : V

$\frac{dV}{dt} = 6 \text{ m}^3/\text{min}$ | $\frac{dh}{dt} = ?$

$$V = \frac{1}{2} wh \cdot 10 = 5wh$$

$$\boxed{V = 5wh}$$



$$\frac{h}{5} = \frac{w}{2} \longrightarrow w = \frac{2h}{5}$$

$$V = 5 \cdot \left(\frac{2h}{5}\right) \cdot h = V = 2h^2$$

$$V = 2h^2 \xrightarrow{\text{diff.}} \boxed{\frac{dV}{dt}} = 4\boxed{h} \cdot \boxed{\frac{dh}{dt}}$$

$\frac{dV}{dt}$: 6

h: 3

$\frac{dh}{dt}$: ?