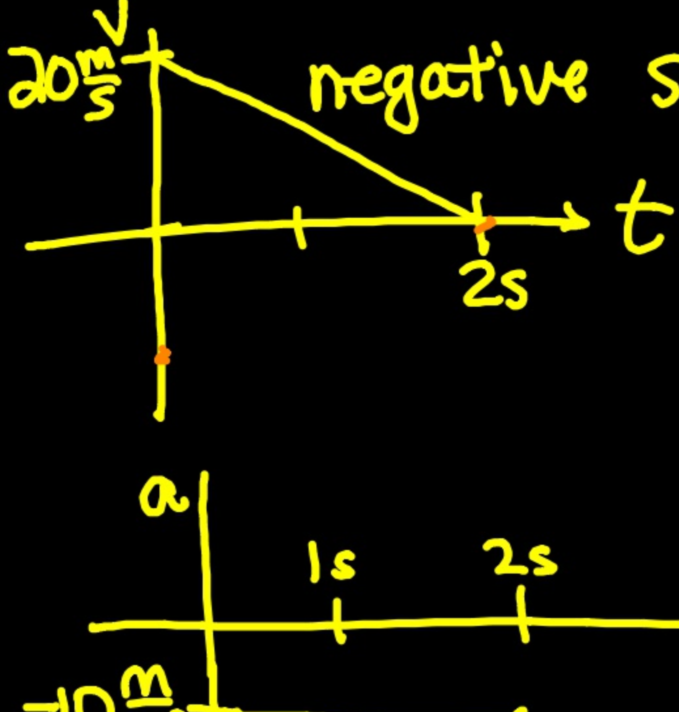
Bellwork

Your car slows from $20\frac{m}{s}$ to $0\frac{m}{s}$ at a constant rate in 2s.

1. Graph v vs. t and a vs. t
2. How would graphs be different if speeding up?



negative slope $= \frac{-20\frac{m}{s}}{2s}$

$= -10\ \frac{m}{s^2}$

Hw Review

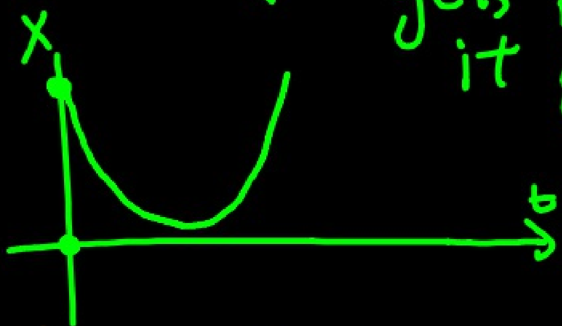
#5: Written Description

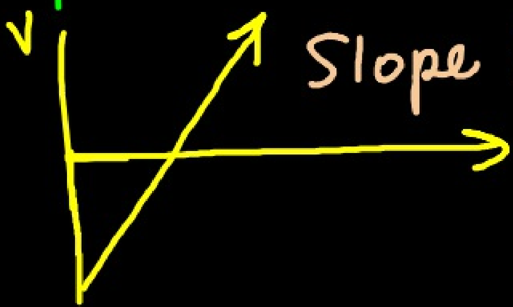
Towards the sensor, then away from the sensor.

→ slope of position graph is negative

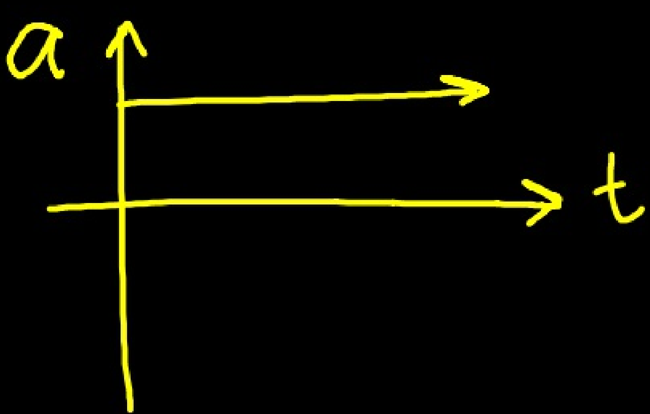
→ slope of position graph is positive

gets slower when it goes up, it gets faster when it goes down





Slope is positive



Acceleration Formula

$$\vec{a} = \frac{\vec{V}_f - \vec{V}_i}{\Delta t}$$

↑ average acceleration

$\vec{V}_i$ = starting velocity

$\vec{V}_f$ = final velocity

Δt = time

Known Info

$\vec{V}_i = 9.10\frac{m}{s}$

$\vec{V}_f = 0\frac{m}{s}$

$\vec{a} = -1.8\frac{m}{s^2}$

$\Delta t =$

Want

Δt

$$\vec{a} = \frac{\vec{V}_f - \vec{V}_i}{\Delta t}$$

algebra

$$\frac{\Delta t}{1}\left(-1.8\frac{m}{s^2}\right) = \left(\frac{0 - 9.10\frac{m}{s}}{\Delta t}\right)\frac{\Delta t}{1}$$

$$\frac{\left(-1.8\frac{m}{s^2}\right)(\Delta t)}{-1.8\frac{m}{s^2}} = \frac{+9.10\frac{m}{s}}{+1.8\frac{m}{s^2}}$$

$$\boxed{\Delta t = 5.05 s}$$