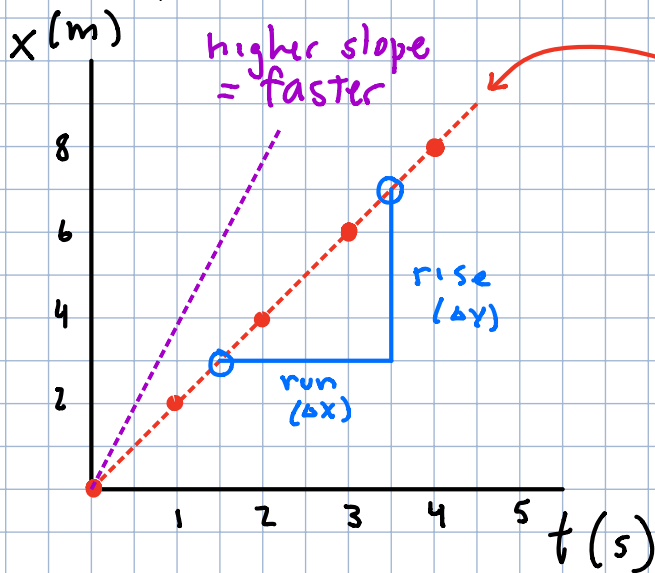


Y axis \rightarrow Position vs. Time \leftarrow X axis

(position as a function of time)



slope

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

for this

$$\text{slope} = \frac{x_2 - x_1}{t_2 - t_1}$$

$$= \frac{7\text{m} - 3\text{m}}{3.5\text{s} - 1.5\text{s}}$$

$$= \frac{4\text{m}}{2\text{s}} = 2 \frac{\text{m}}{\text{s}}$$

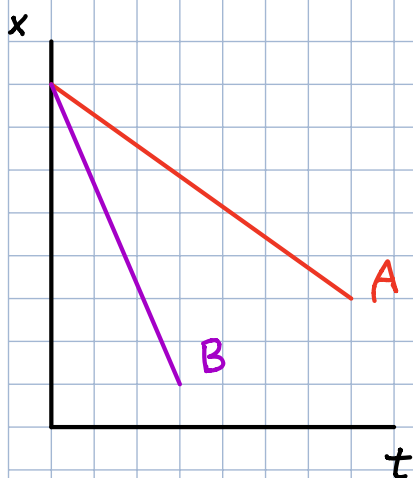
$$\text{slope} = \frac{\Delta y}{\Delta x} \Rightarrow \frac{\Delta x}{\Delta t}$$

this is \bar{v}

Things you should be able to say about SLOPES

- increasing, decreasing or constant?
- +, - or zero

The slope of a Position vs time graph is VELOCITY



The slopes of both A & B are constant and negative

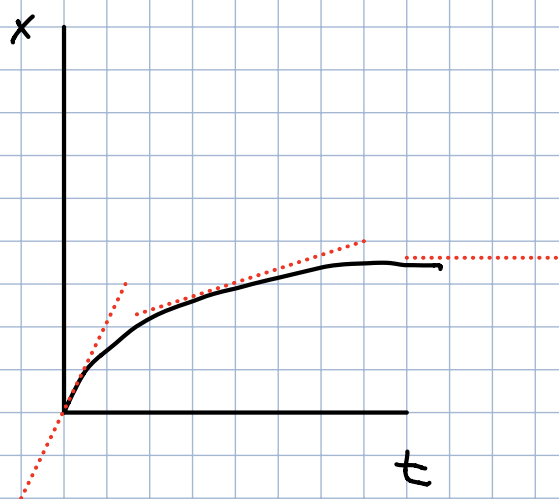
The slope of B is greater than the slope of A (magnitude)

velocities

The ~~slopes~~ of both A & B are constant and negative

velocity

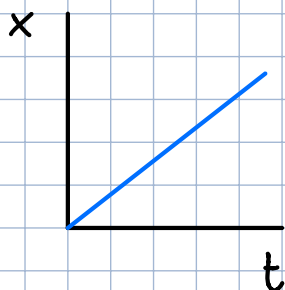
The ~~slope~~ of B is greater than the ~~slope~~ of A (magnitude)
velocity



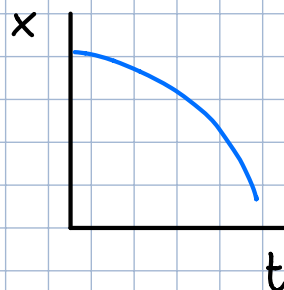
describe the motion of this object

begins with a positive velocity.

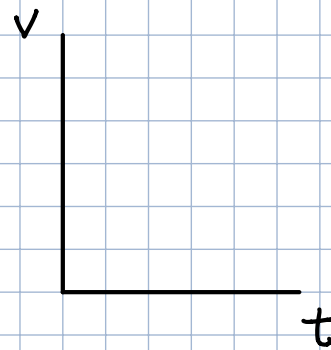
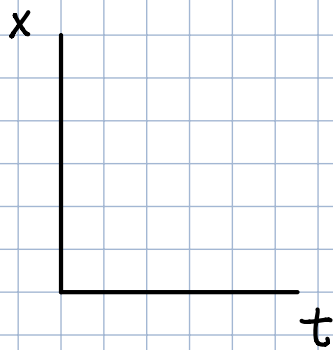
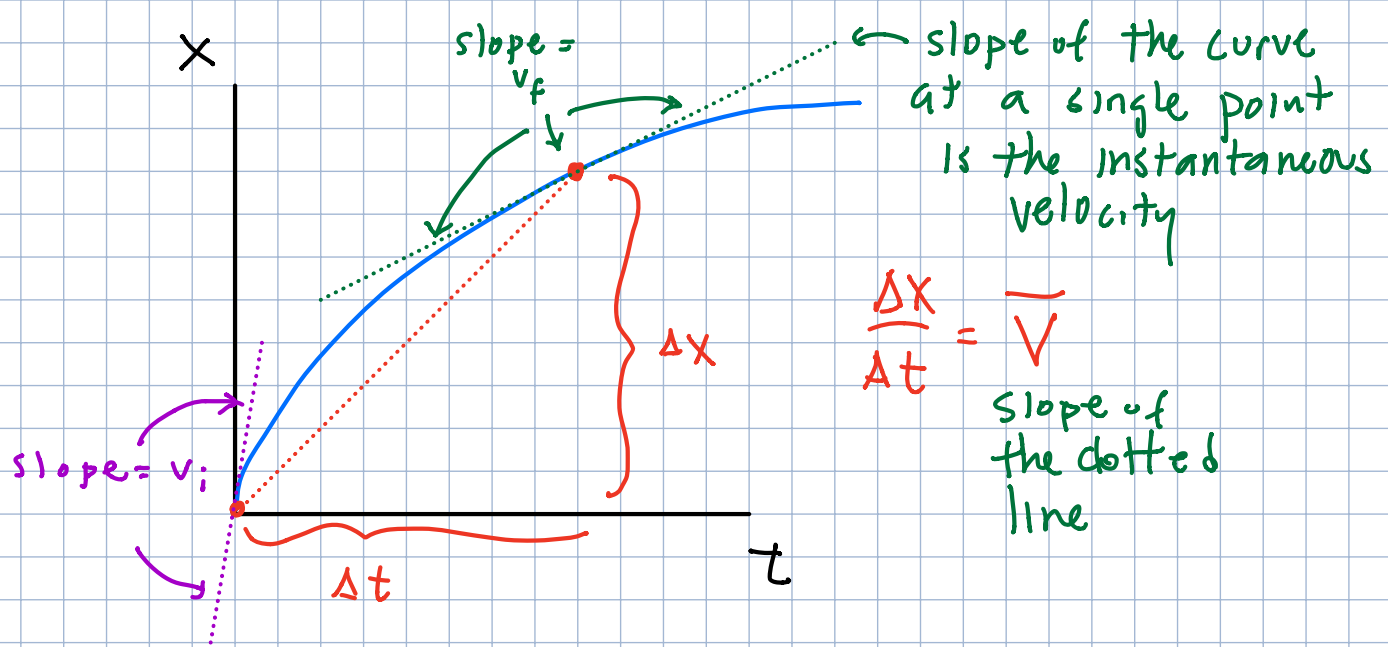
The velocity decreases to zero.



slope (velocity) is constant
 $a = 0$

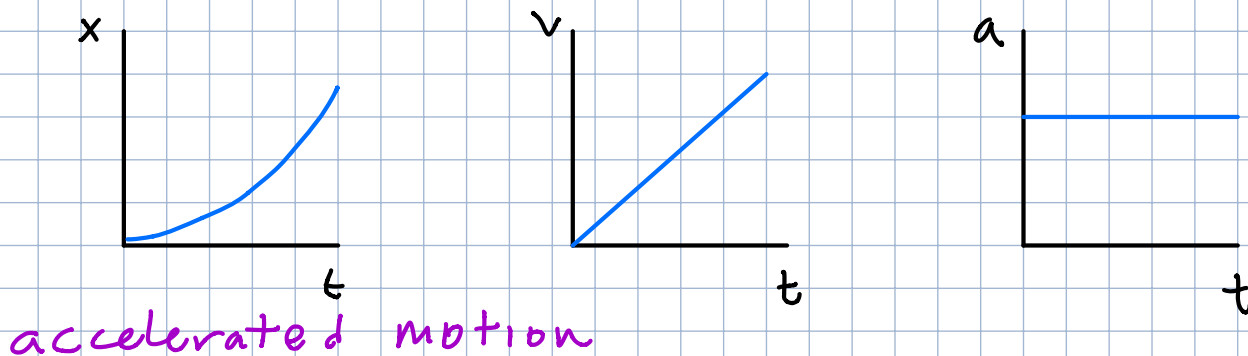
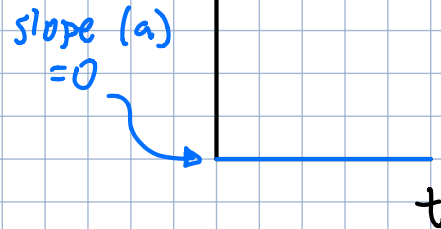
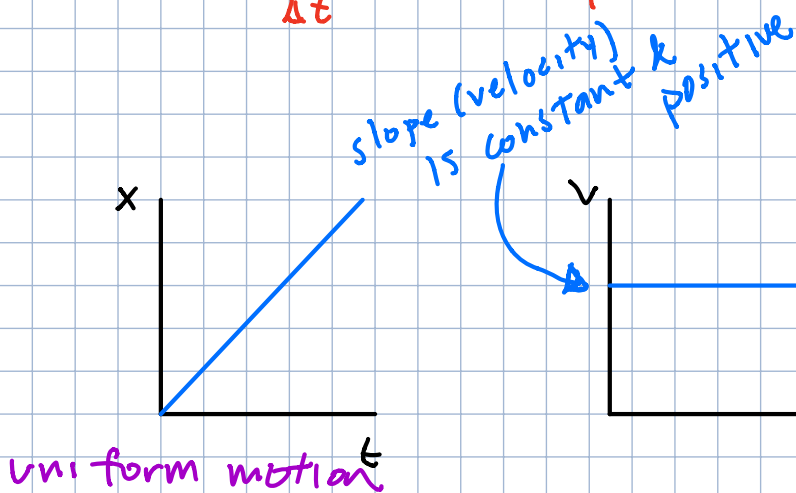


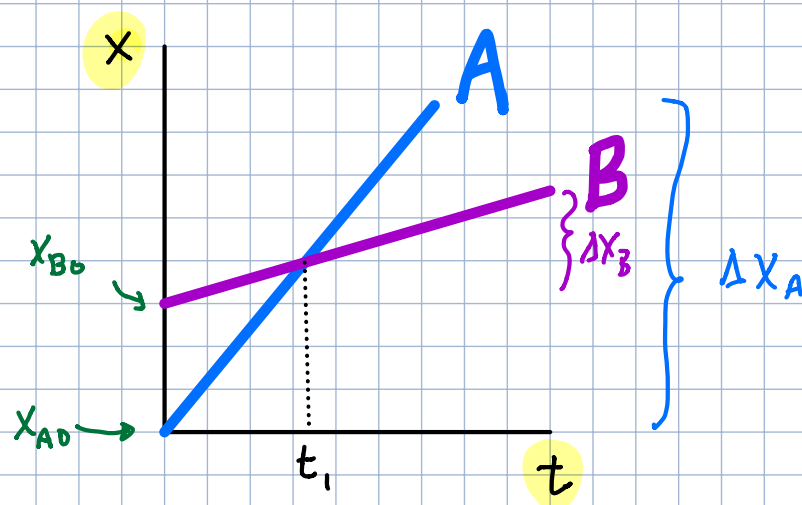
curved = changing slope (velocity)
there is an acceleration



slope = $\frac{\Delta x}{\Delta t} = \text{velocity}$

slope = $\frac{\Delta v}{\Delta t} = \text{acceleration}$



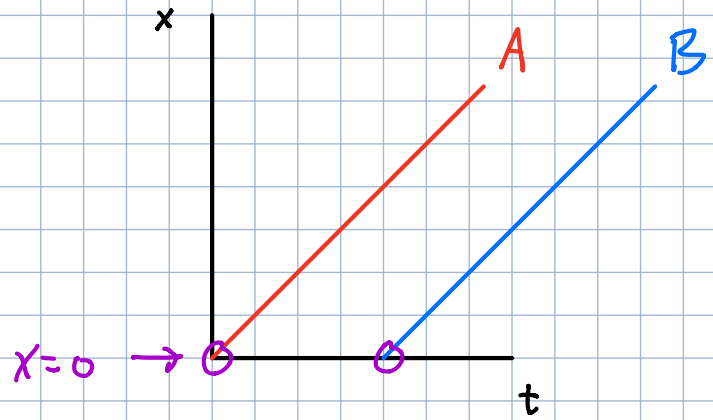
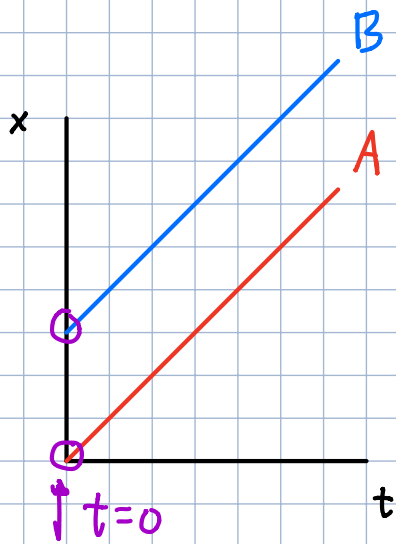


Describe the motion of A & B, two objects moving along the same straight path

B started ahead of A

A moves faster than B

At time t_1 , A passes B



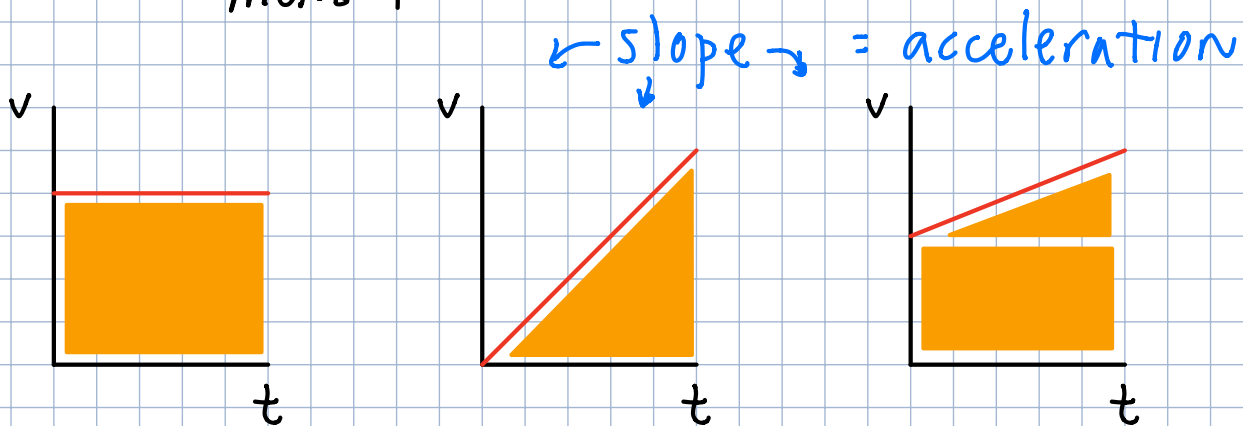
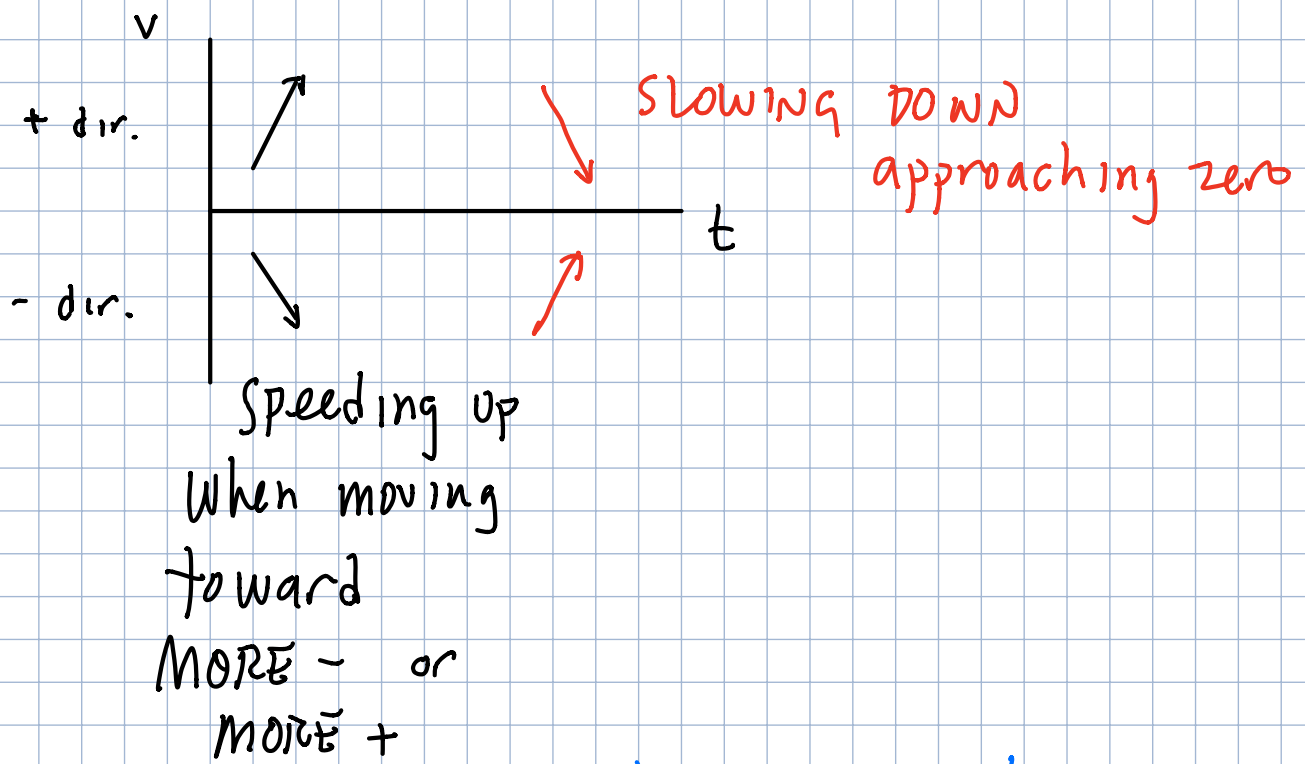
In both graphs objects A & B both move at the same velocity

graph at left:

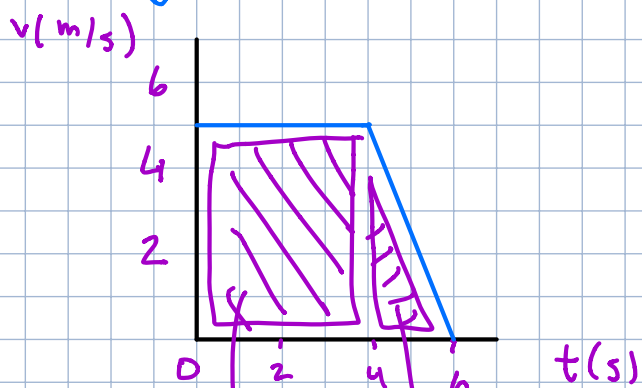
A & B start at the same time but at different positions (B starts ahead of A)

graph at right:

A & B start from the same position, but B started moving later



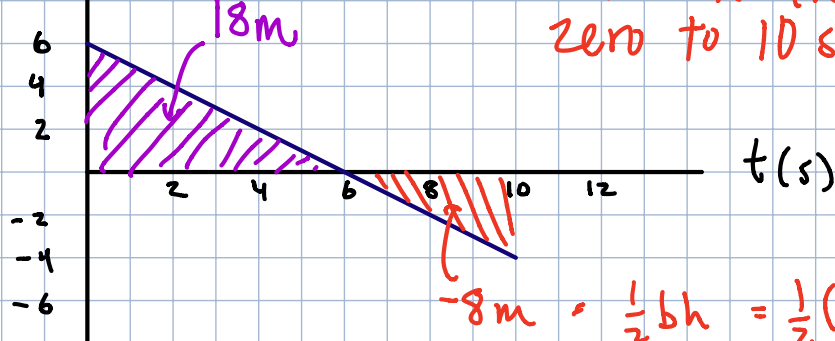
The AREA under the curve of a $v \cdot t$ graph is the DISPLACEMENT (Δx)



what is the displacement of the object from 0 to 6s?

$$\Delta X_{total} = 25m$$

$v(m/s)$



what is Δx from
zero to 10 s?

$$-8m = \frac{1}{2}bh = \frac{1}{2}(2s)(-4m/s)$$

$$\Delta x_{total} = 18m + (-8m) = 10m$$

