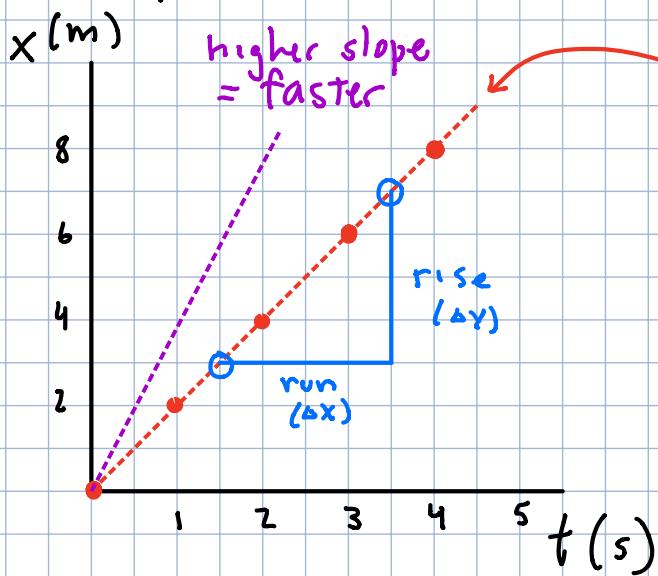


Y axis \curvearrowleft Position vs. Time \curvearrowleft X axis

(position as a function of time)



constant $V = 2 \text{ m/s}$

$x_0 = 0$

slope

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

for this

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

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

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

Things you should be able
to say about slopes

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

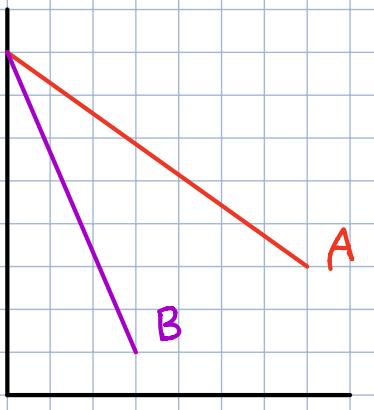
The slope of a Position
vs Time graph is VELOCITY

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

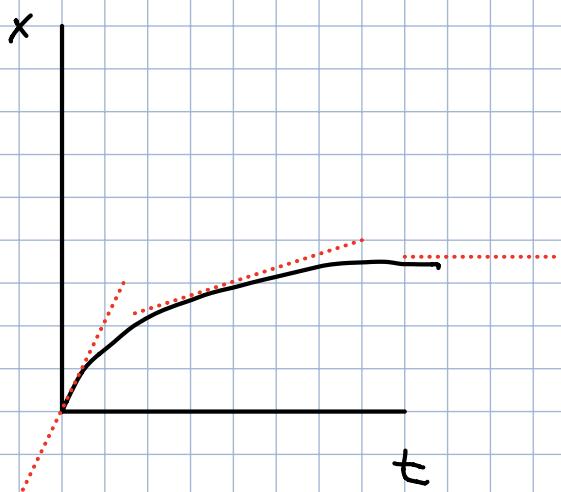
constant and negative

velocity

The ~~slope~~ of B is greater

than the ~~slope~~ of A (magnitude)

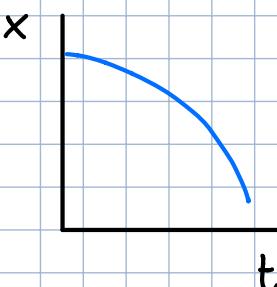
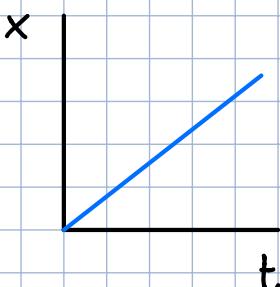
velocity



describe the motion of
this object

begins with a
positive velocity.

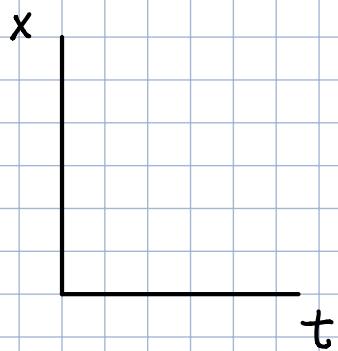
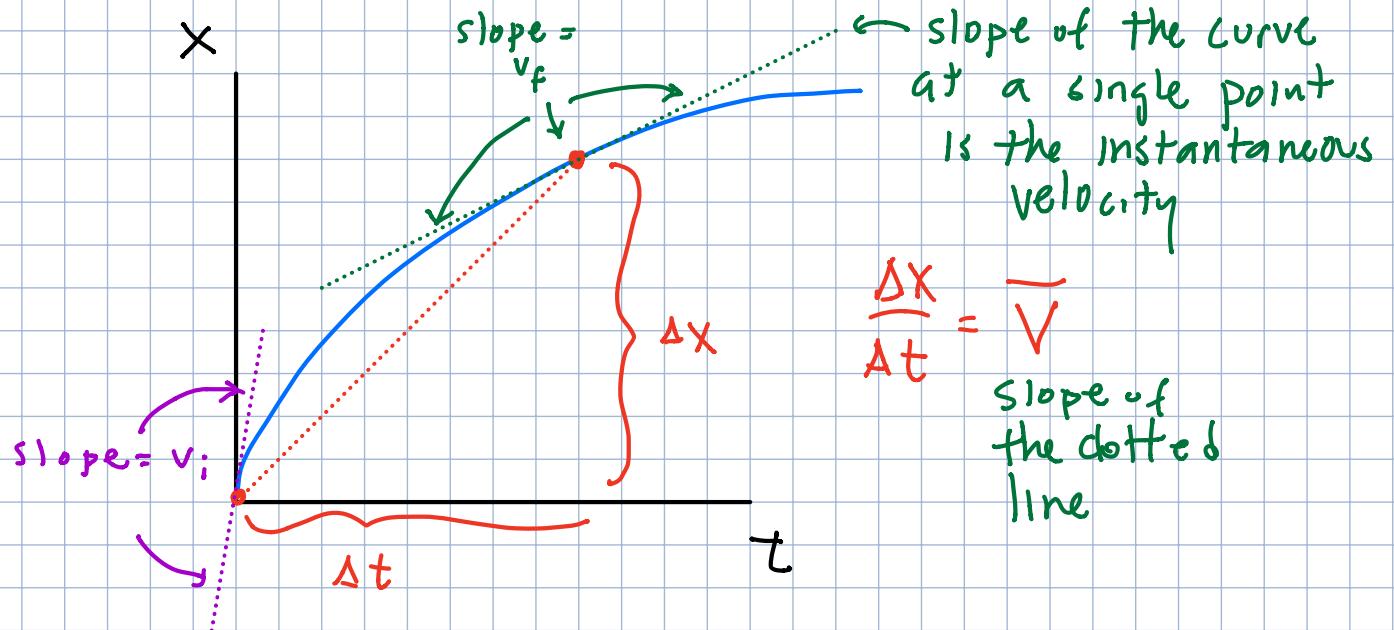
The velocity decreases
to zero.



slope
(velocity) is constant

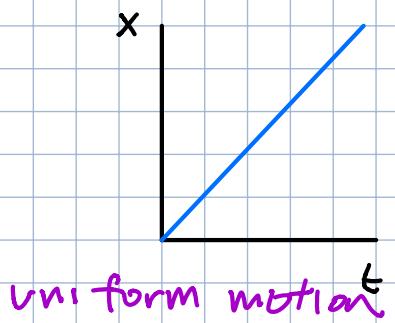
$$a = 0$$

curved = changing slope
(velocity)
there is an Acceleration

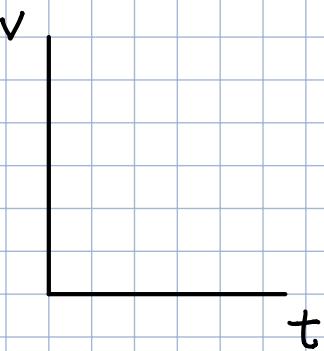


$$\text{slope} = \frac{\Delta x}{\Delta t} = \text{velocity}$$

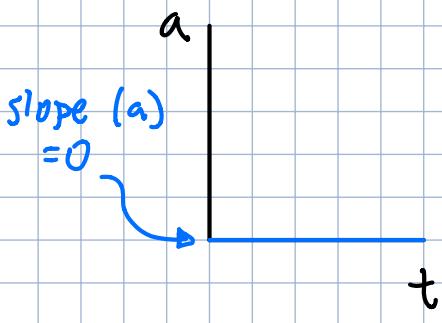
slope (velocity)
is constant & positive



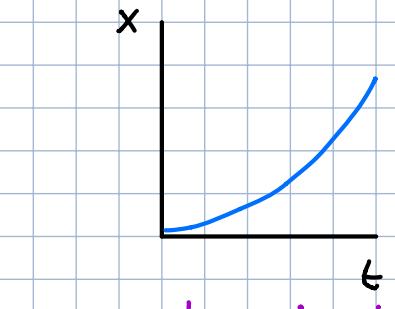
uniform motion



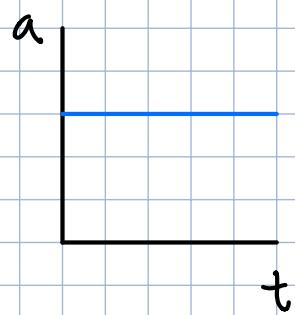
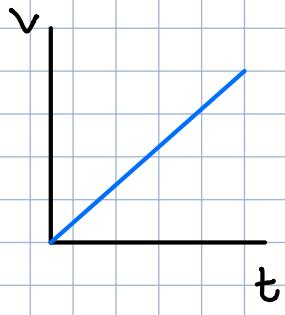
$$\text{slope} = \frac{\Delta v}{\Delta t} = \text{acceleration}$$

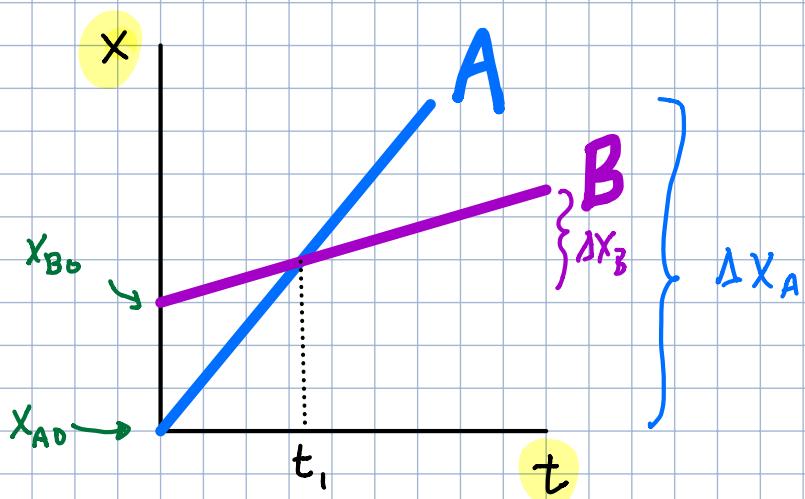


$$\text{slope (a)} = 0$$



accelerated motion



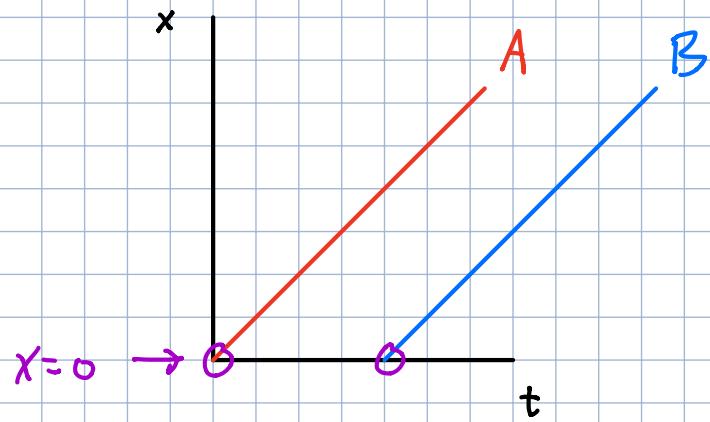
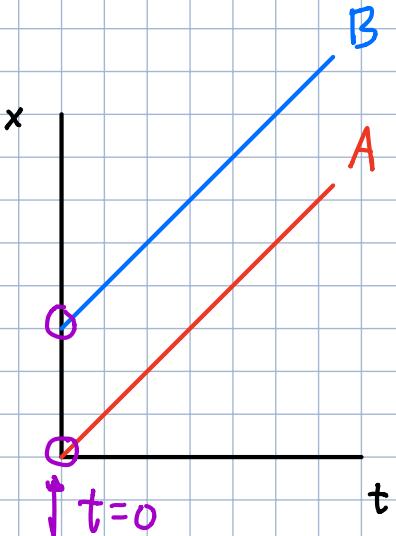


Describe the motion of A & B, two objects moving along the same straight path

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

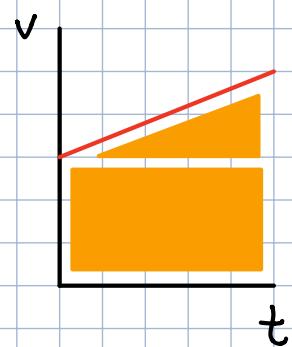
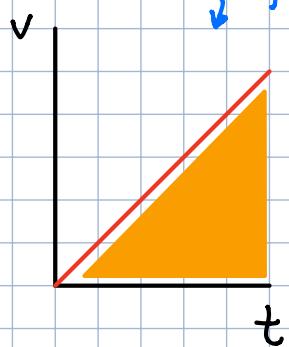
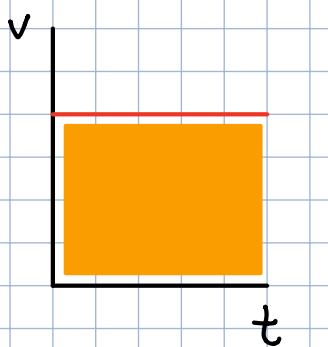
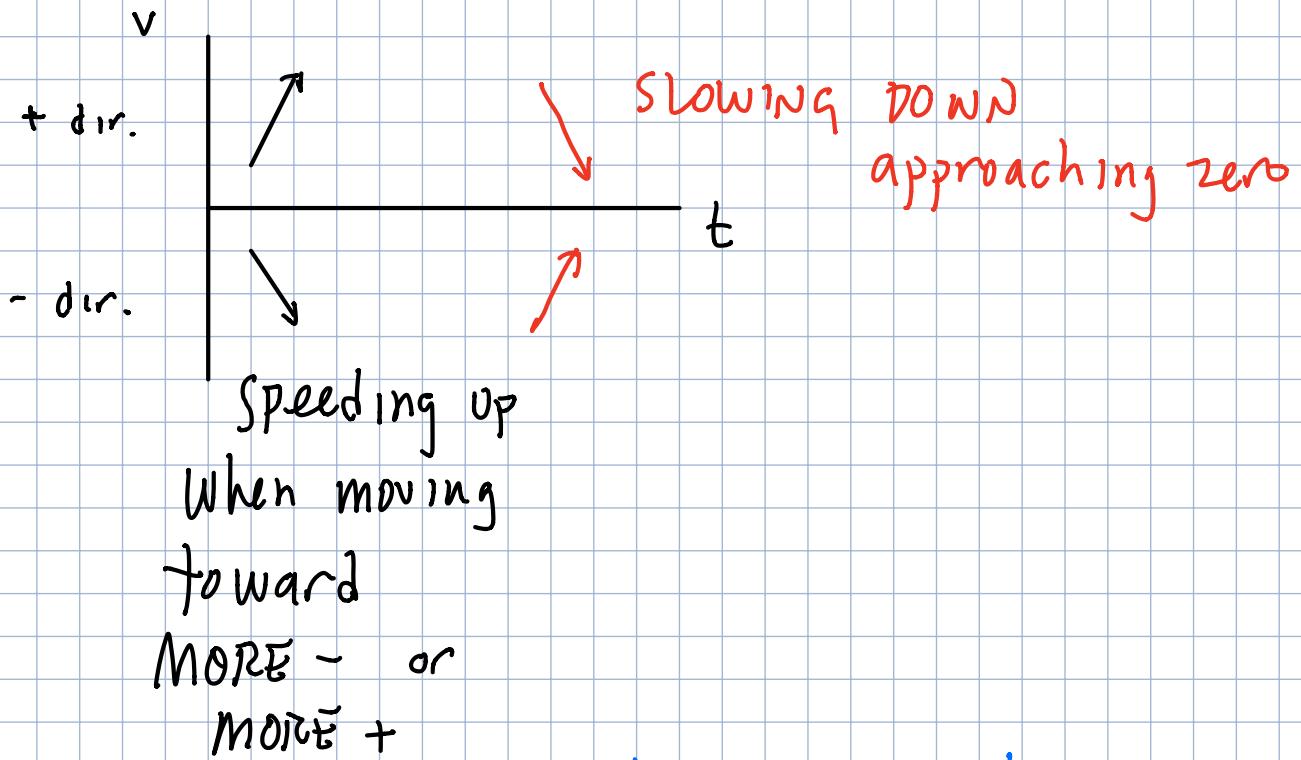
but at different positions

(B starts ahead of A)

graph at right:

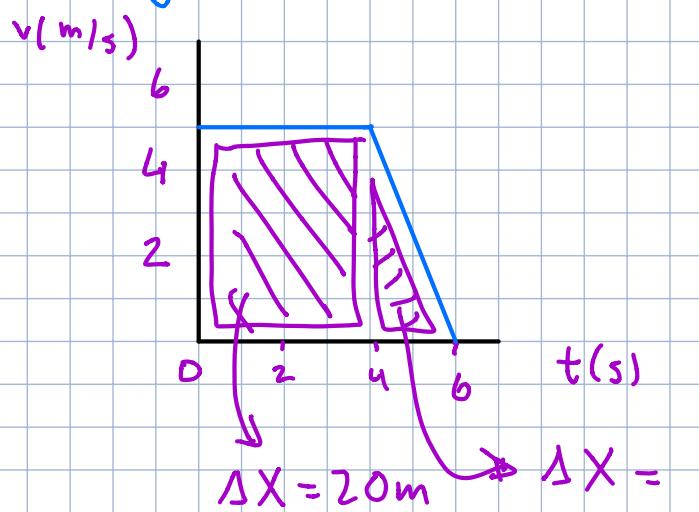
A & B start from the same position,

but B started moving later



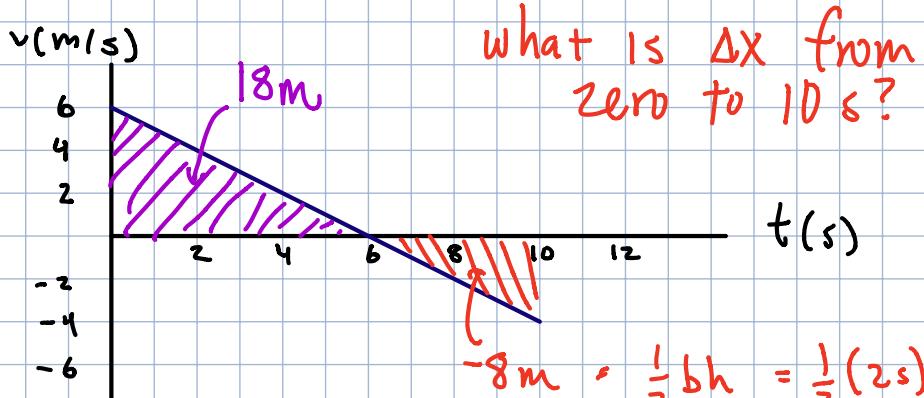
\leftarrow slope \rightarrow = acceleration

The AREA under the curve of a v.t graph is the DISPLACEMENT (Δx)



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

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



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

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

