Lecture 1 - 1.10

Tuesday, January 10, 2023 10:36 AM

Average Velocity = displacement / time

- Note that its <u>displacement</u> not distance

$$\bar{v} = \frac{\text{displacement}}{\text{time}} = \frac{x_f - x_i}{t_f - t_i}$$

Velocity (positive or negative)

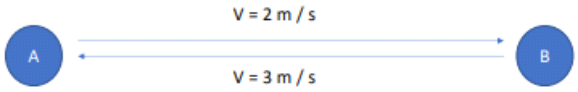
$$\vec{v}(t) = \frac{d\vec{x}(t)}{dt}$$

Average Speed (always positive)

Speed (always positive)

$$|\vec{v}(t)|$$

Homework Hint



How do you find the average speed?

Total Distance / Total Time.

Assume a distance L and see what happens!

Acceleration

$$\vec{a}(t) = \frac{\vec{v}(t)}{dt} = \frac{d^2\vec{x}(t)}{dt^2}$$

- 2nd derivative of position

ANY change in velocity is called "acceleration"

- Speeding up (positive acceleration)
- Slowing down (negative acceleration)

Curving upwards = positive acceleration
Curving downwards = negative acceleration