Kinematics in 1D

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Describing Motion

Motion diagrams are diagrams where equal time passes between each of the points

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- Speeding up: acceleration and velocity is in the same direction

- Slowing down: acceleration and velocity are in the opposite direction

- If velocity is constant, acceleration is zero

Since velocity is the derivative of position with respect to time, the total distance is the integral of the velocity curve.

$$\int_{t_1}^{t_2} \vec{v}(t) \; dt = \Delta \vec{x}$$

$$\int_0^t \vec{a}(t') \; dt' + \vec{v_0} = \vec{v}(t)$$