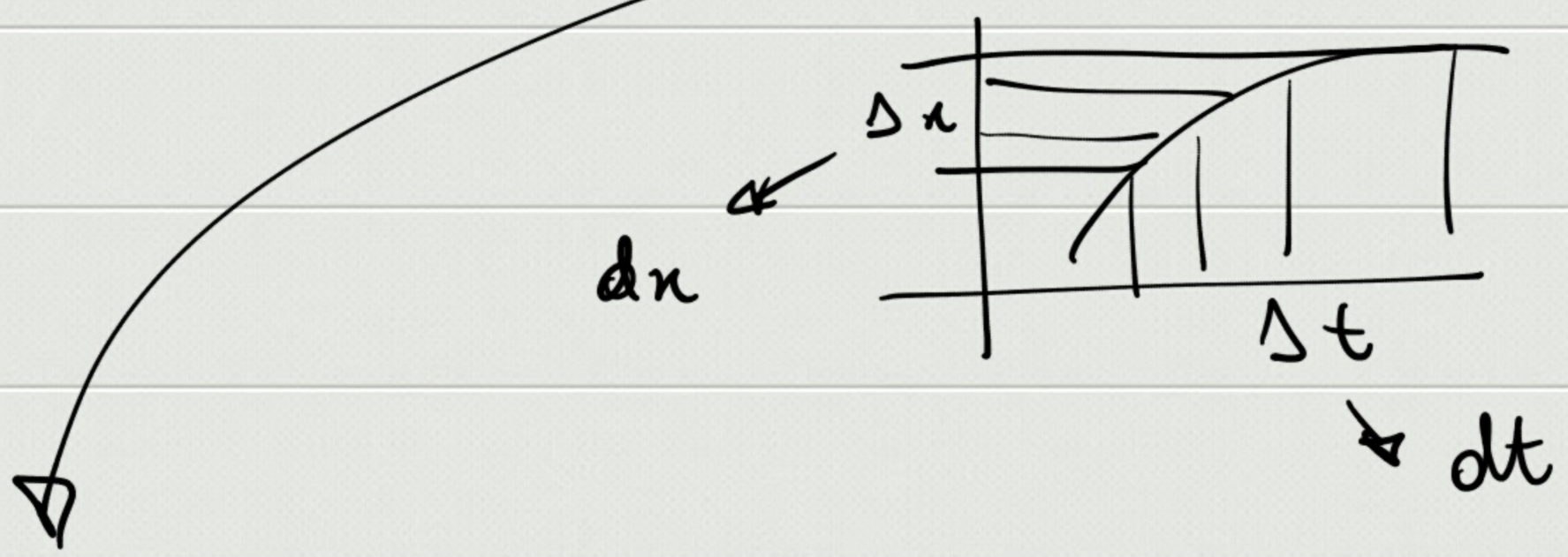
$$\boxed{v(t) = x'(t)} = \lim_{\Delta t \to 0} \frac{x(t+\Delta t) - x(t)}{\Delta t} =$$

$$= \lim_{\Delta t \to 0} \frac{\Delta x}{\Delta t} = \frac{dx}{dt} \Rightarrow \boxed{v(t) = \frac{dx}{dt}}$$



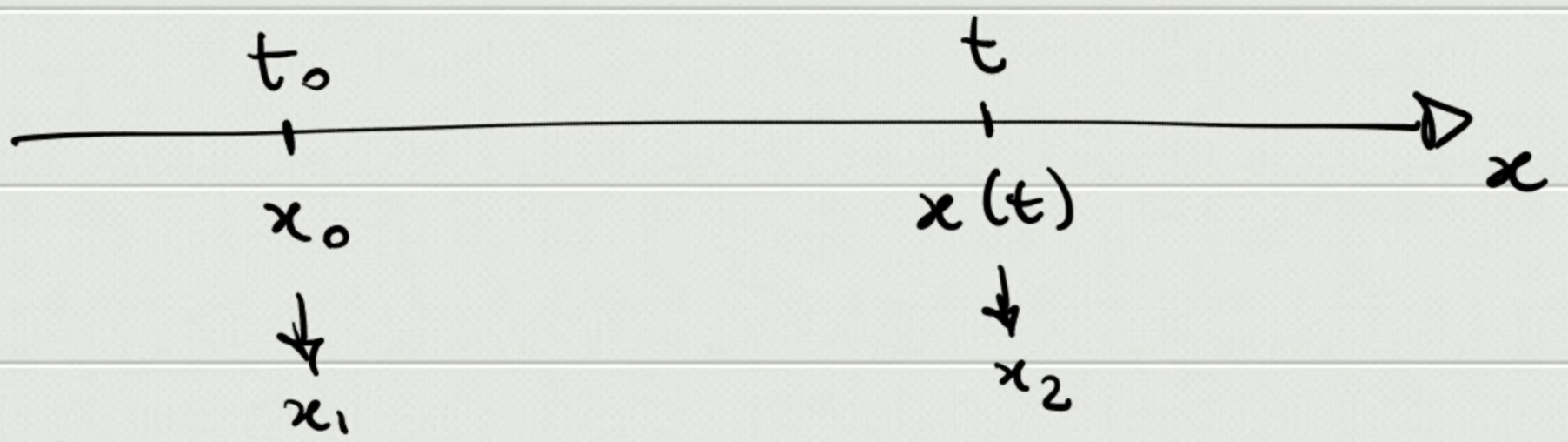
$$dx = v(t)\,dt$$

$$\Rightarrow \int_{x_1}^{x_2} dx = \int_{t_1}^{t_2} v(t)\,dt$$

$$x_1 = x(t_1)$$

$$x_2 = x(t_2)$$

$$x_2 - x_1 = \int_{t_1}^{t_2} v(t)\,dt$$



$$\boxed{x(t) = x_0 + \int_{t_0}^{t} v(t)\,dt}$$

Moto rettilineo uniforme (v = costante)

$$x(t) = x_0 + \int_{t_0}^{t} v\,dt = x_0 + v(t - t_0)$$

$$t_0 = 0 \quad \Rightarrow \quad x(t) = x_0 + vt$$

$$v_m = \frac{\Delta x}{\Delta t} = \frac{x_2 - x_1}{t_2 - t_1}$$

$$x_2 - x_1 = \int_{t_1}^{t_2} v(t)\,dt$$

$$\Rightarrow \quad v_m = \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} v(t)\,dt = \langle v(t) \rangle_{[t_1, t_2]}$$