

Problem 1

Determine the speed after 4 seconds if the object starts from rest



$$m\vec{v}_1 + \sum \int_{t_1}^{t_2} \vec{F} dt = m\vec{v}_2$$

$$\rightarrow 0 + \int_0^{4 \text{ sec}} (4 - 0.01t^2) dt = (28 \times 10^3) \text{ kg} (v_2)$$

$$\left(4t - \frac{0.01}{3} t^3 \right) \Big|_0^4 = 28 \times 10^3 v_2$$

$$v_2 = 0.564 \text{ m/s}$$