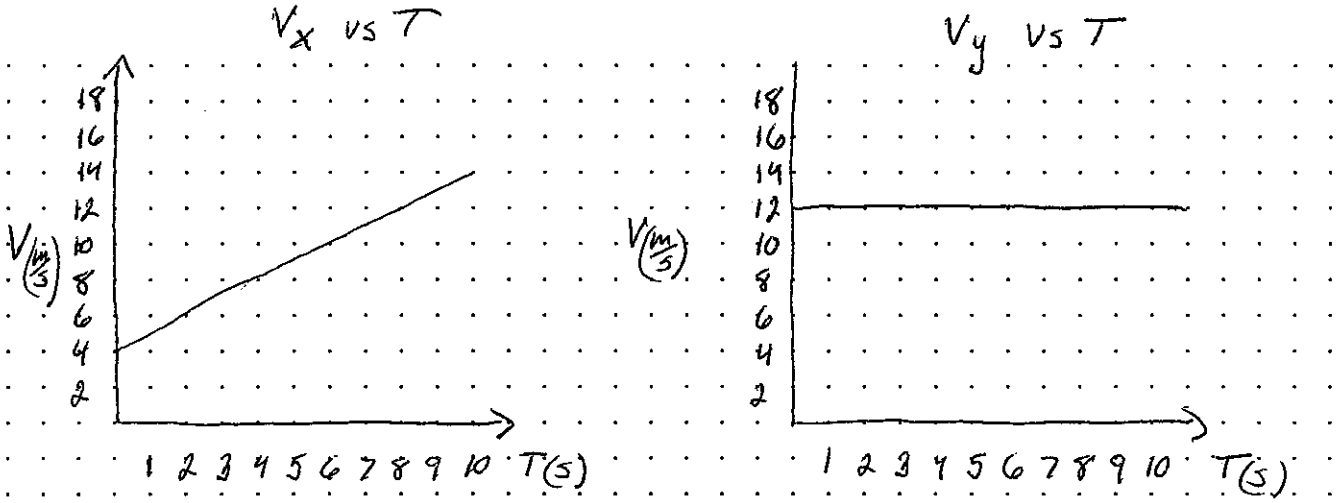


(1) How far is the object from its initial position after the first 7.0 s?

(2) In unit vector notation describe $\vec{V}$ at 3.0 s.

(1) solution

$$v_y = 12\ m/s$$

$$v_x = 4.0\ m/s + 1.0\ m/s^2\ t$$

$$x_y = \int v_y = \int 12\ m/s\ dt = 12\ m/s\ t$$

$$x_x = \int v_x = \int 4.0\ m/s + 1.0\ m/s^2\ t\ dt$$

$$= 4.0\ m/s\ t + 0.5\ m/s^2\ t^2$$

Evaluate at 7.0s

$$x_y = 12\ m/s\ (7.0s) = 84\ m$$

$$x_x = 4.0\ m/s\ (7.0s) + 0.5\ m/s^2\ (7.0s)^2 = 52.5\ m$$

Evaluate $||\vec{x}||$

$$||\vec{x}|| = \sqrt{(52.5m)^2 + (84m)^2} = 99.1\ m$$

99m

(2) Solution

$$\vec{V} = V_x \hat{i} + V_y \hat{j}$$

$$V_x = 4.0\ m/s + 1.0\ m/s^2\ (3.0\ s) =$$

$$V_y = 12\ m/s$$

$$\boxed{\vec{V} = 7.0\ m/s\ \hat{i} + 12\ m/s\ \hat{j}}$$