

position = $s(t)$

velocity = $s'(t)$

acceleration = $s''(t)$

$$a(t) = 4t - 6 \quad \text{and} \quad v(0) = 3$$

$$\int (4t - 6) dt$$

$$v(t) = \frac{4t^2}{2} - 6t + C \quad \swarrow$$

$$v(0) = 3 \rightarrow C = 3$$

$$v(t) = 2t^2 - 6t + 3$$

$$a(t) = \sin t + 2t \quad v(0) = 5$$

$$v(t) = \int (\sin t + 2t) dt$$

$$v(t) = -\cos t + \frac{2t^2}{2} + C$$

$$v(0) = 5$$

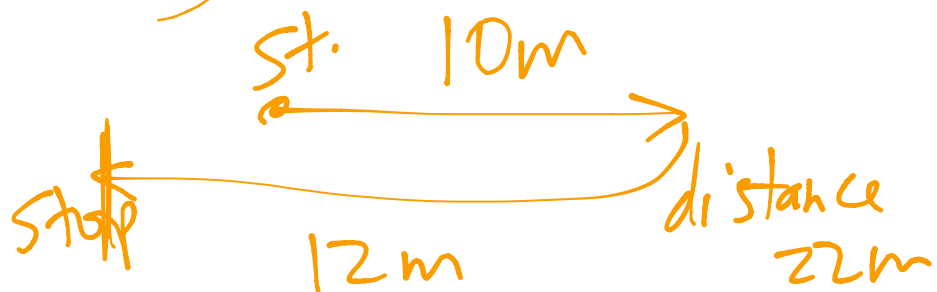
$$5 = -\cos 0 + 0 + C$$

$$5 = -1 + C$$

$$C = 6$$

$$v(t) = -\cos t + t^2 + 6$$

$$v(t) = \int a(t) dt$$



displacement - 2m

$$\text{EX. } v(t) = t^2 - 7t + 10$$

$$\text{Displacement} = \int_1^7 (t^2 - 7t + 10) dt$$

$$\text{Distance} = \int_1^7 |t^2 - 7t + 10| dt$$