

$$= \frac{11}{3} - \frac{18}{3} + 15$$

$$= \frac{-4}{3}$$

* Ex 2) A particle, initially at rest, moves along the x-axis such that its acceleration at time $t > 0$ is given by $a(t) = \cos t$. At time $t=0$, its position is $x=3$.

a) Find $v(t)$.

$$v(t) = \int \cos t \, dt$$

$$v(t) = \sin t + C$$

$$0 = \sin 0 + C$$

$$C = 0$$

$$v(t) = \sin t$$

b) Find $s(t)$.

$$s(t) = \int \sin t \, dt$$

$$s(t) = -\cos t + C$$

$$3 = -\cos 0 + C$$

$$3 = -1 + C$$

$$C = 4$$

$$s(t) = -\cos t + 4$$