

HW2-1 Soln)

$$x(t) = 3t^3 - 2t + 5 - 3 \cos(\pi t)$$

$$v(t) = \frac{dx}{dt} = 9t^2 - 2 + 0 + 3\pi \sin(\pi t)$$

$$a(t) = \frac{dv}{dt} = 18t + 0 + 0 + 3\pi^2 \cos(\pi t)$$

So at $t = 2$ seconds,

$$a(2) = 18(2) + 3\pi^2 \cos(2\pi) = 36 + 3\pi^2 = 65.61 \text{ m/s}^2$$