

$$16. X(t) = 4 - 6t^2$$

$$a) t = ? \quad (v = 0)$$

$$v = \frac{dx}{dt} = -12t$$

$$0 = -12t$$

$$t = 0 \quad (\text{when } v = 0)$$

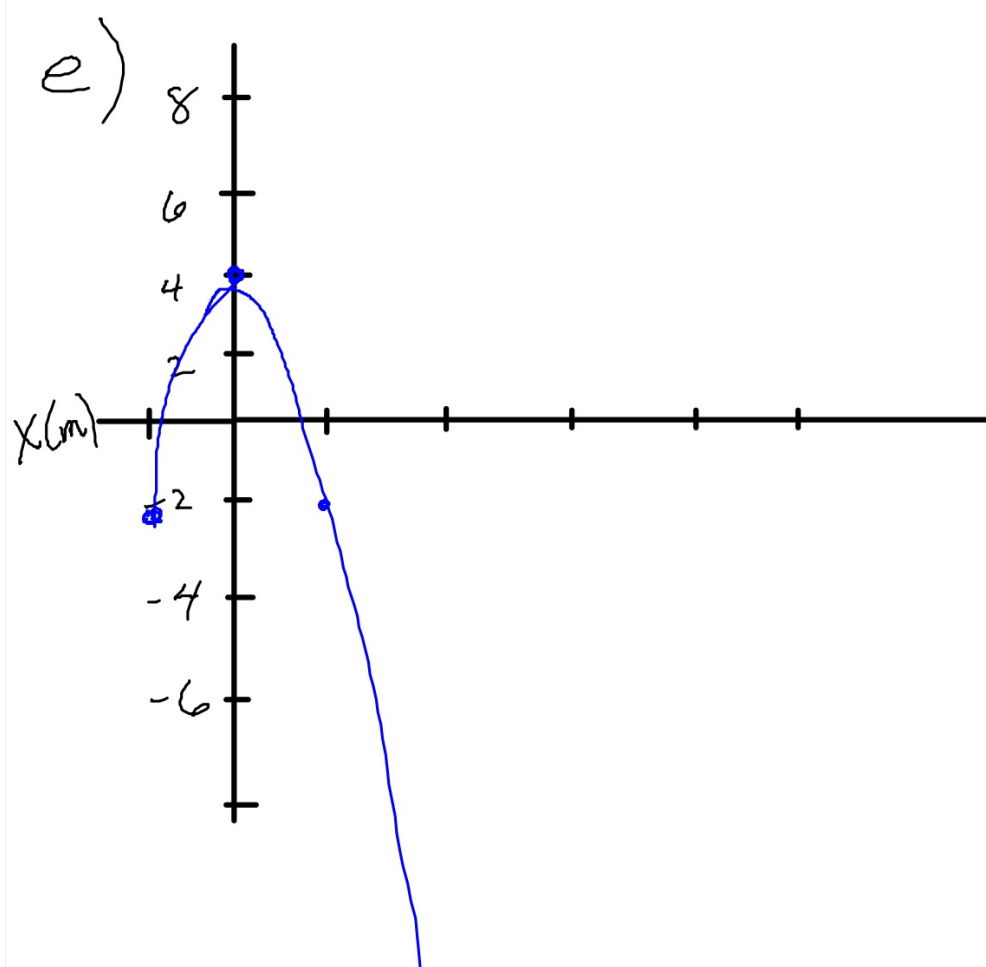
$$b) x = ? \quad (v = 0)$$

$$x(0) = 4 - 6(0)^2 = 4 \text{ m}$$

$$c) t = ? \quad (x = 0) \quad 0 = 4 - 6t^2$$

$$4 = 6t^2$$

$$t = \pm \sqrt{\frac{4}{6}} = \pm 0.816 \text{ s}$$



15. $x(t) = 4 - 12t + 3t^2$

a) $v(1) = ?$ $v = \frac{dx}{dt}$

$$v(t) = -12 + 6t$$

$$v(1) = -12 + 6(1) = -6 \text{ m/s}$$

b) moving in neg. dir.

c) $S = 6 \text{ m/s}$

d) speeding up or slowing down?

$$v(1.1) = -12 + 6(1.1) = -5.4 \text{ m/s}$$

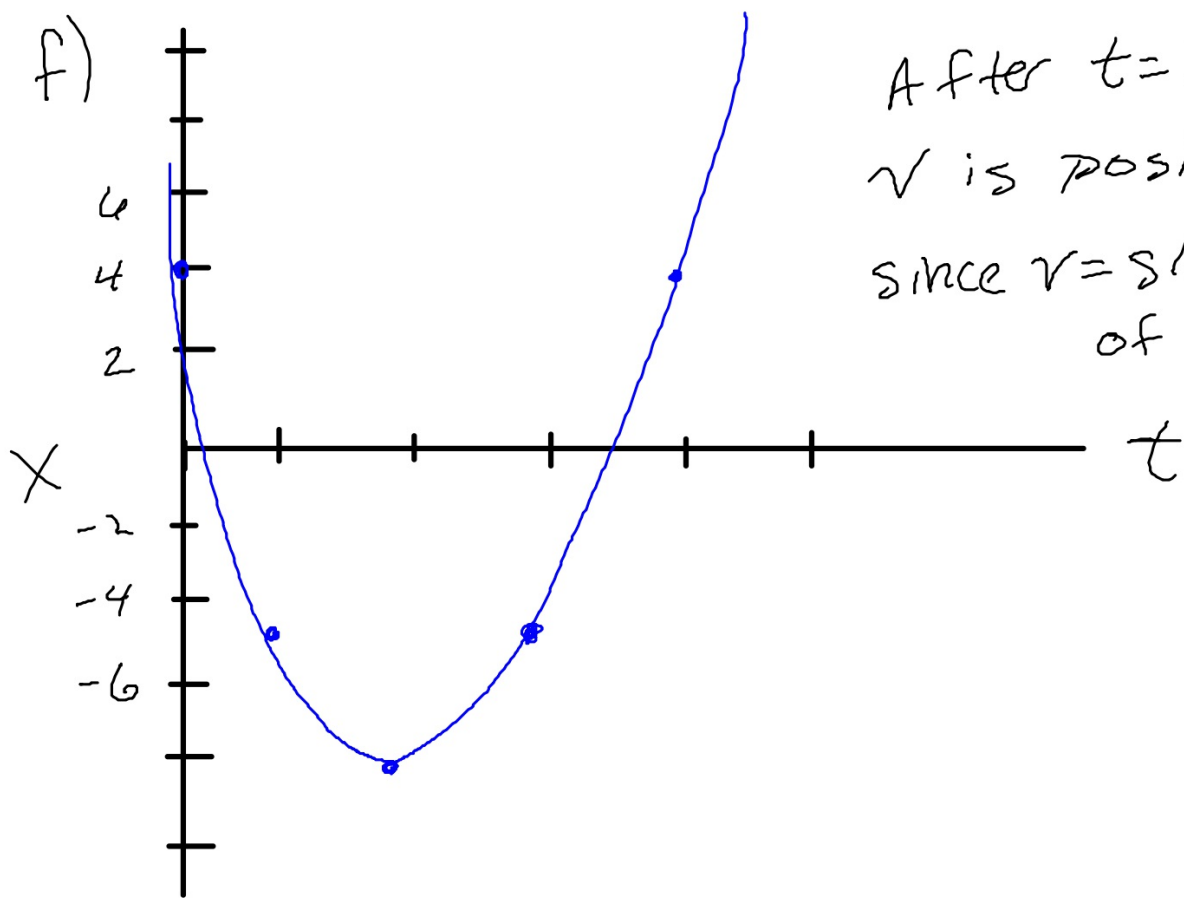
$$v(0.9) = -12 + 6(0.9) = -6.6 \text{ m/s}$$

slowing down

e) $v=0$ $t=?$

$$0 = -12 + 6t$$

$$t = 2 \text{ sec}$$



After $t=2$,
 v is positive
since $v = \text{slope}$
of $x-t$