(1) $a(t) = 4 - 2t$ $\quad x_0 = -10 \quad v_0 = 8$

(a) $v(t) = 4t - t^2 + C \qquad C = v(0) = v_0 = 8$

$\underline{v(t) = 8 + 4t - t^2}$

(b) $v(5) = 8 + 20 - 25 = \underline{3\ m/s}$

(c) $x(t) = 8t + 2t^2 - \frac{1}{3}t^3 + C \qquad C = x(0) = x_0 = -10$

$\underline{x(t) = -10 + 8t + 2t^2 - \frac{1}{3}t^3}$

(d) $x(3) = -10 + 24 + 18 - 9 = \underline{23\ m}$

(2) (a) <u>yes</u> turning point occurs when $v = 0$ at $t = 1$ sec.

(b) area under curve from $t = 0$ to $t = 1$ is -2.5 m

$\Delta x = -2.5$ m, $x_f - x_i = -2.5$

$x_f = x_i - \Delta x = 8 - 2.5 = \underline{5.5\ m}$

(c) area from 0 to 2 $\Rightarrow 0 \Rightarrow \Delta x = 0 \quad \underline{x_f = 8\ m}$

(d) area from 0 to 4 $\Rightarrow 20$ m

$\Delta x = 20$, $\underline{x_f = 28\ m}$