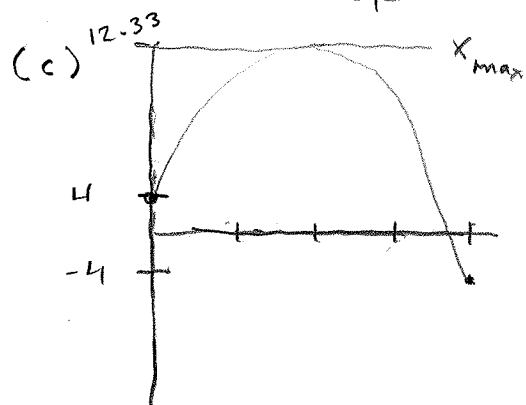


① (a) $V_x(t) = \frac{d}{dt} x(t)$ $x(t) = 4 + 10t - 3t^2$

$V(t) = 10 - 6t$

(b) $V_i = V(0) = 10 \text{ m/s}$
 $V_f = V(4) = -14 \text{ m/s}$

no, these are not used for average speed or velocity



$x(0) = 4 \text{ m}$

$x(4) = 4 + 40 - 48 = -4 \text{ m}$

Find time where derivative = 0.

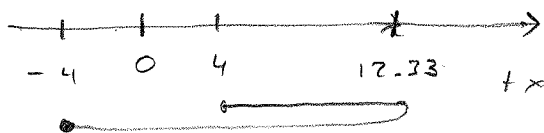
$\frac{dx}{dt} = 10 - 6t = 0, \quad t = \frac{5}{3}$

$x_{\max} = 4 + 10\left(\frac{5}{3}\right) - 3\left(\frac{25}{9}\right)$

$= 4 + \frac{50}{3} - \frac{25}{3} = 4 + \frac{25}{3} = \underline{12.33 \text{ m}}$

look at schematic

total distance is $8.33 + 16.33 = \underline{24.7 \text{ m}}$



(d) displacement = $-4 - 4 = \underline{-8 \text{ m}}$

(e) distance/ $\Delta t = \underline{6.17 \text{ m/s}}$

(f) displacement/ $\Delta t = \underline{-2 \text{ m/s}}$

② velocity is slope.

(a) $\frac{60}{20} = \underline{3 \text{ m/s}}$

(b) $\underline{0 \text{ m/s}}$

(c) $-\frac{100}{10} = \underline{-10 \text{ m/s}}$