1. The x position as a function of time of a particle (in m) is given by $x(t) = 4+10t-3t^2$. Let the initial time be $t_i = 0$ and the final time by $t_f = 4$.

   (a) Assuming the particle only moves in 1D, what is the velocity function of time?

   (b) Find v_i and v_f. Are these needed to find the average speed and/or average velocity?

   (c) Find the total distance travelled between the initial and final times given. (One way to find this requires the maximum position reached.)

   (d) Find the displacement.

   (e) Find the average speed.

   (f) Find the average velocity.

2. The figure below shows the x position of a particle as a function of time. What is the x component of the velocity at

   (a) $t = 10$ sec

   (b) $t = 25$ sec

   (c) $t = 35$ sec