Kinematics Calculus problems

1. The velocity of a particle moving on a line at time t is given by the equation v(t) = 4t2 + 6t. How many meters did the particle travel from t = 1 to t = 8? What is the acceleration of the ball at t = 3?
2. Determine an expression for the speed of a rocket moving straight upward in the y direction if its height, while the engine is still firing, is given by the expression y(t) = 4.0 m + (8.2 m/s) t. What is the location of the rocket at time t = 2?
3. Over a certain stretch of track, a roller coaster’s position is given by the equation x(t) = (10 m) + (60 m/s)t (– 15 m/s/s)t2 where x is measured from a starting line. When and where is the speed equal to zero?