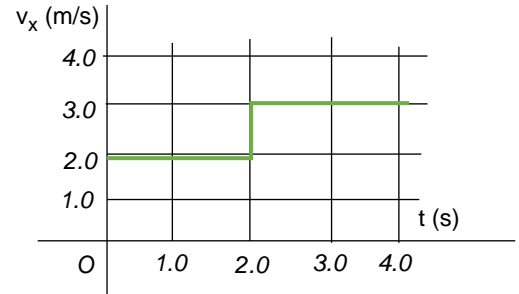## CLASS PROBLEMS

Problem 1)

A ball moves in a straight line (the x-axis). The graph shows this ball's velocity as a function of time.
a) What are the ball's average velocity during the first 3.0 s?
b) Suppose that the ball moved in such a way that the graph segment after 2.0 s was -3.0 m/s instead of +3.0 s. Find the ball's average velocity in this case.

Problem 2)

Consider a particle moving in a straight line, and assume that its position is defined by the equation:
$$x = 5.0\, t^2 - 14.0\, t - 3.0$$
where t is expressed in seconds and x in meters. Determine:
a) time at which the velocity will be zero.

b) The position and distance traveled by the particle at that time.
c) The acceleration of the particle at that time.
d) distance traveled by the particle from t = 0 s to t = 6 s.

problem 3)

The acceleration of a particle is defined by the relation $a = kt^2$.
a) Knowing that v = -8.0 m/s when t = 0 and that v = +8.0 m/s when t = 2s, determine the constant k,
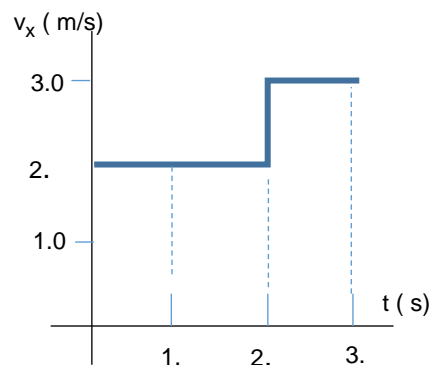b) Write the equations of motion.

Problem 4)

A small block has constant accelertion as it slides down a frictionless incline. The block is released from rest at the top of the incline, and its speed after it has traveled 6.80 m to the bottom of the incline is 3.80 m/s. What is the speed of the block when it is 3.40 m from the top of the incline?

Problem 5)

A ball moves in a straight line (x-axis). The graph shows this ball's velocity as a function of time.
a) What are the ball's average speed and average velocity during the first 3.0 s?
b) Suppose that the ball moved in such a way that graph segment after 2.0 s was -3.0 s m/s instead of +3.0 m/s. Find the ball's average speed and avergae velocity in this case.