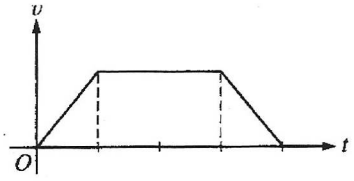
1: One-Dimensional Motion Graphs

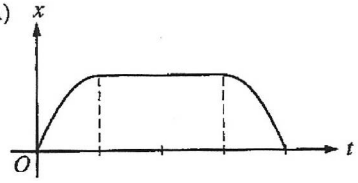
Name: Key

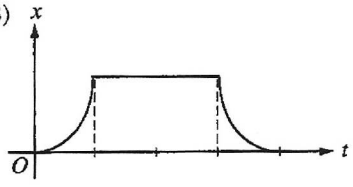
1. An object is moving with constant non-zero ***velocity*** in the +x axis. The displacement versus time graph of this object is
   a) A horizontal straight line.
   b) A vertical straight line.
   c) A straight line making an angle with the time axis.
   d) A parabolic curve.

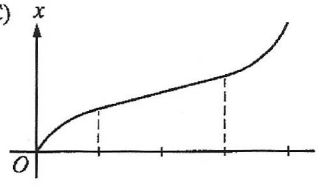
2. An object is moving with constant non-zero ***acceleration*** in the +x axis. The displacement versus time graph of this object is
   a) A horizontal straight line.
   b) A vertical straight line.
   c) A straight line making an angle with the time axis.
   d) A parabolic curve.

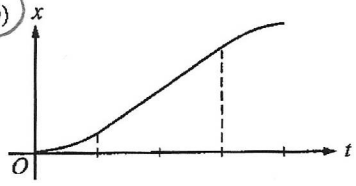


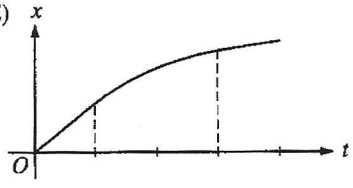
3. The graph above shows the velocity v as a function of time t for an object moving in a straight line. Which of the following graphs shows the corresponding displacement x as a function of time t for the same time interval?

(A)


(B)


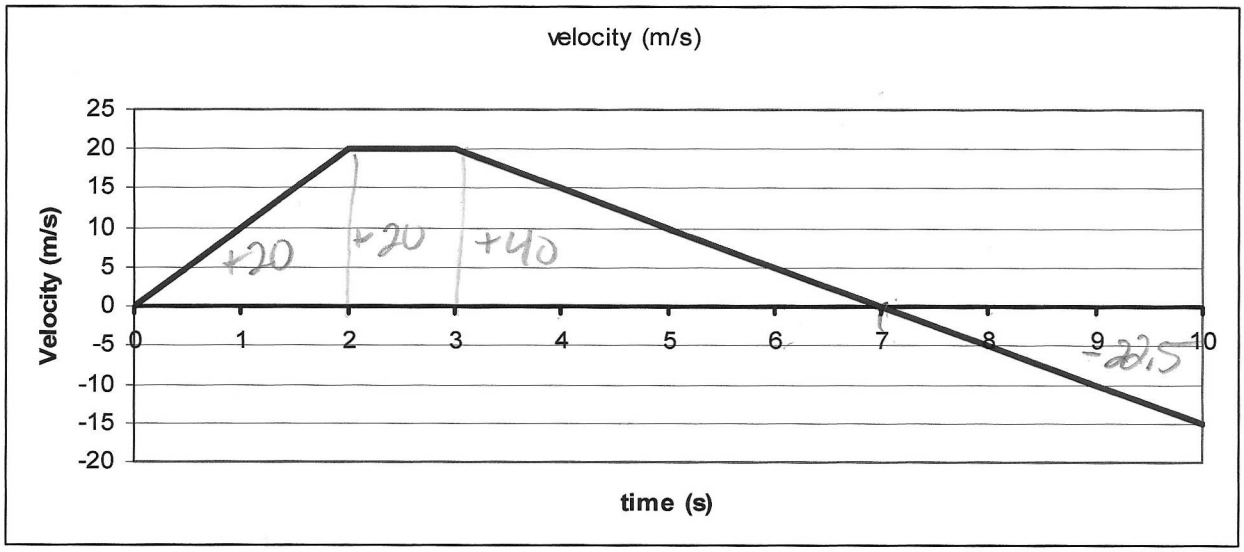
(C)


(D)


(E)


4. A ball is thrown straight up. When the ball reaches the highest point
   a) Both its velocity and acceleration are zero.
   b) Its velocity is zero and its acceleration is not zero.
   c) Its velocity is not zero and its acceleration is not zero.
   d) Neither its velocity nor its acceleration is zero.

5. The motion of a car on a straight track is given in the diagram below. Answer the following questions for the velocity versus time graph below. (10 points)



a. Describe the motion of the car from time equals zero to 2 seconds. Be specific and include values. Explain. (2 points)

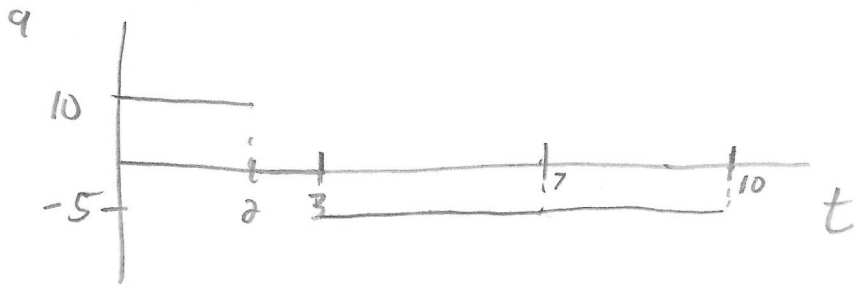
+ constant acceleration

$a = \frac{\Delta V}{t} = \frac{20}{2} = 10\ m/s$

b. At what time is the displacement the maximum? Explain. (2 points)

t = 7s +V, 0 to 7 second

d. Sketch a graph of acceleration versus time for the car. ***Include important values for all major points on the graph***. (3 points)



e. Sketch a graph of displacement versus time. ***Include important values for all major points on the graph and include the curvature of the graph***. (3 points)