# MHF 4UI – Problem Set # 40 – Recognizing Rates of Change

1. Sketch a graph that illustrates the following scenarios:
    a) Mike heads to school walking at a steady pace. He waits for a stop light and continues on to school running. He stays at school for a short meeting, picks up his bike then rides straight home.
    b) A log floats in a slow, steady moving river then heads through two sets of rapids before going over a waterfall and falling into a lake.
    c) A skydiver enters a plane that takes off and climbs at a steady rate. He jumps out and free falls until his parachute opens. He then descends the rest of the way at a constant speed.
    d) A taxi driver charges a passenger an initial fee then a fixed amount for every 100 m of travel.

2. From the graph below, determine the speeds of the car for each of the 5 intervals between A and E.
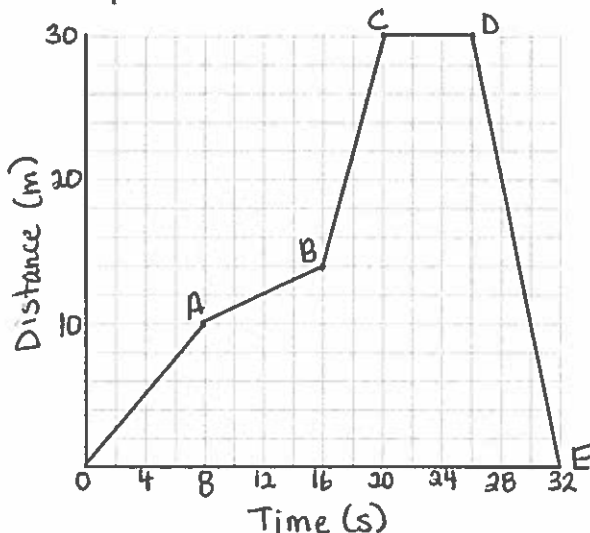
3. Draw a sketch of speed vs time as a car makes one circuit of each track. (S= start)
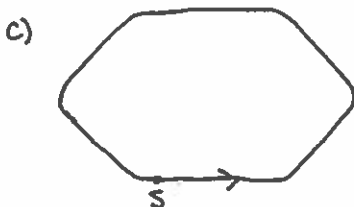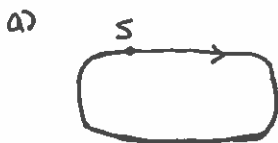
4. A distress flare is shot from a boat. It's height over time is illustrated in the table of values below:

Time	Height
0	12
4	332
8	492
12	492
16	332

    a) What type of function is modelled here ?
    b) Determine the function
    c) If the shooter fired 2 m from the deck of the boat then how high up was the deck ?
    d) At what height did the flare actually stop ?
    e) How long was the flare lit for ?
    f) What was the average speed of the flare in the 14th second ?