**SPH3U1 Quiz Review Graphing Problems**

1. **Sketch** a **v vs. t**, an **a vs. t** and a **d vs. t** graph of the following situation. Assume all accelerations are constant.

 A car initially travelling at 10 km/h accelerates (the acceleration starts at t = 0) until it reaches a velocity of 80 km/h. It then travels at that speed for awhile. It then slows down to 40 km/h and travels at that speed for awhile. Finally, it slows down to rest.



2. Use the graph below to answer the following questions.



a) Calculate the acceleration i) in the first 4 seconds.

 ii) between 16 and 20 seconds.

 iii) in the last 8 seconds.

b) Calculate the displacement i) in the first 12 seconds

 ii) between 30 and 40 seconds.

 c) What is the highest speed obtained?

 d) Which section of the graph has the highest magnitude of acceleration?

 e) What does the section of the graph under the t axis mean?

 f) At what times is the velocity zero?

 h) At what times is the velocity constant and non-zero?

 i) Does the object return to its starting point? Explain.





 4. In the above graph

 a) Calculate the speed during the first 4 seconds.

 b) Calculate the speed during the last 4 seconds.

 c) Calculate the instantaneous speed at 8.0 s

 d) Calculate the average speed for the entire trip.

 e) Calculate the average acceleration for the entire trip.

 f) During what time intervals is the speed constant?

 g) On the axes below, sketch the v vs t and a vs t graphs for the above.



2. a) 2 cm/s2; -8 cm/s2; 1 cm/s2; b) 215 cm; -48 cm; c) 32 cm/s; d) 16-20 s; f) 20-24 s;

 g) 5-12 s, and 28-32 s; h) No

3. a) 5.5s b) A, by 6 m c) A, (B does not accelerate) d) At 2.6 s, B passes A, At 8.0s, A passes B

e) A, 10 m/s [fwd] f) A since its overall displacement is greater in the same about of time.

4. a) 1.5 m/s; b) 0.2 m/s; c) 0.7 m/s; d) 0.87 m/s; e) 0.087 m/s2; f) 0-5 s, and 9-15 s

