Walk This Way

The standard set of motion graphs includes position vs. time, velocity vs. time and acceleration vs. time graphs. Some graphs can be directly derived from a given graph, while other graphs need extra information to be provided. Each of the graphs below represents motion with three individual parts with different constant accelerations.

Graphs 1-3: For each of the graphs, produce:

- a. Qualitative (shapes only) graphs of the other quantities. If position vs. time is given, produce velocity vs. time and acceleration vs. time graphs on different axes.
- b. Initial conditions for the motion. These include where the object starts and what the object is doing at the beginning of the first section of motion. In some cases, you choose these values.
- c. A written description of how you would walk the motion in a straight line in the hallway. Include the terms speed up, slow down, walk forward, walk backward and other similar phrases. Do not use the words accelerate, decelerate or velocity.
- d. Motion diagrams that include qualitative velocities and accelerations.





- 4. If you want to sketch a v vs. t graph when given a graph of x vs. t:
 - a. how do you get the magnitudes?
 - b. how do you get the directions?
- 5. If you want to sketch an a vs. t graph when given a graph of x vs. t , how do you get the directions?
- 6. If you want to sketch an a vs. t graph when given a graph of v vs. t:
 - a. how do you get the magnitudes?
 - b. how do you get the directions?
- 7. Suppose you want to sketch a graph of x vs. t from a v vs. t graph.
 - a. What extra information do you need?
 - b. How could you determine the shape of the curve?
 - c. How could you determine the final value for a section?
- 8. Suppose you want to sketch a graph of x vs. t from an a vs. t graph.
 - a. What extra information do you need?
 - b. How could you determine the shape of the curve?
 - c. How could you determine the final value for a section?