PHYS 1210 Group Work Sheet 1
Graphing Position, Velocity, and Acceleration

With your group, discuss how to answer these questions and write your group answer in the space provided.

1. Make a position-time graph to describe the tortoise-hare race.

position $\longrightarrow$

time $\longrightarrow$

2. Make a velocity-time graph to describe the tortoise-hare race. Use the same horizontal (time axis) scale as the position-time graph.

velocity $\longrightarrow$

time $\longrightarrow$

3. A car waits at a stop light for 5.0 s. The light turns green, so the car then steadily accelerates to 15.0 m/s over 5.0 s, then cruises at a constant speed of 15.0 m/s.

    a. Complete the velocity-time graph for the car.

    b. Complete the acceleration-time graph for the car.

    c. Compete the position-time graph for the car.

    Be quantitative! Mark numbers and units on the axes!

3. In the following scenarios, the motion of an object is to be described in four ways: (i) in words, (ii) as a position-time graph, (iii) as a velocity-time graph, and (iv) as an acceleration-time graph. In each case, only one description is given. Construct the other three. (You may need to assume some initial conditions.) For additional fun, think of mathematical expressions that would describe the position, velocity, and acceleration.

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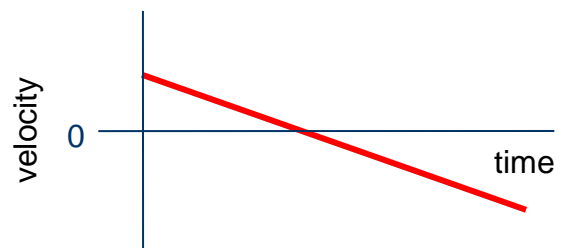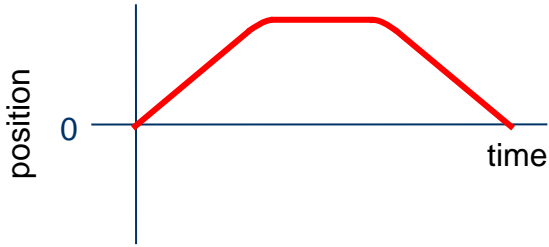
A coconut hangs motionless from

its tree, then drops with increasing

downward speed until it lands on

the ground, quickly coming to rest.

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position 0 |_____ time

position 0 |_____ time

velocity 0 |_____ time

velocity 0 |_____ time

acceleration 0 |_____ time

acceleration 0 |_____ time