

Name _____

Student # _____

Problem 1. Derive any two of the 4 kinematic equations (5 pts each)

Be sure to explain each step using the English language. Not an essay, but just a terse explanation of “why” you did the step you just did.

a) Derivation 1

b) Derivation 2

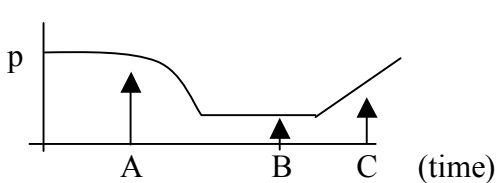
Problem 2

- a) What do you get if you take the slope of the line on a position vs. time graph?
- b) What do you get if you take the slope of the line on a velocity vs. time graph?
- c) What do you get if you take the area under a line on a velocity vs. time graph?

Problem 3: A cart on a ramp comes to rest after it travels +5 meters in 2 seconds. Assume constant acceleration. The direction it traveled in is the positive direction.

- a) Determine the average *speed*
- b) Determine the initial *speed* of the object
- c) Determine the *acceleration* of the object

Problem 4: Describe what took place in order to have the following p-t graph:



- b) Which time did the object move with the greatest speed? A, B or C?
- c) Between which two times did the object have the greatest magnitude of instantaneous acceleration? At a time between A & B or at a time between B & C?