Physics 200

Exam 1 review *DRAFT*

Exam 1: Friday Sept. 19 during regular class time

Expect problems and questions similar in form to lab homework, concept questions (in class), quiz questions, and text problems. There will be about 3 pages of problems and 1 page of short answer/choose the best answer/fill in the blank questions. Problems and questions will emphasize concepts and techniques covered in class, but applied to new situations.

Information to be provided on exam:

$$v_{xf} = v_{xi} + a_x t$$

$$x_f - x_i = \bar{v}_x t = \frac{1}{2}(v_{xi} + v_{xf})t$$

$$x_f - x_i = v_{xi}t + \frac{1}{2}a_x t^2$$

$$v_{xf}{}^2 = v_{xi}{}^2 + 2a_x(x_f - x_i)$$

$a_c = v^2/r$ $\quad\quad$ $\vec{\boldsymbol{u}}_{PA} = \vec{\boldsymbol{u}}_{PB} + \vec{\boldsymbol{v}}_{BA}$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

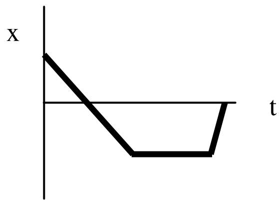
Other information that will be provided:

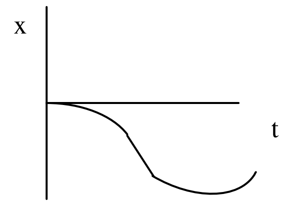
- Conversion factors (table inside back cover of book)
- Any constants or physical data needed for a particular problem (such as the radius of the Earth, mass of an electron,....)

You should know, understand, and be able to use the definitions of average and instantaneous velocity and acceleration.
You should be able to use trig functions and the Pythagorean theorem to find missing sides and angles of a right triangle. (You do not need to know the law of cosines or the law of sines.)
You should also know what the metric prefixes μ, m, c, and k stand for!

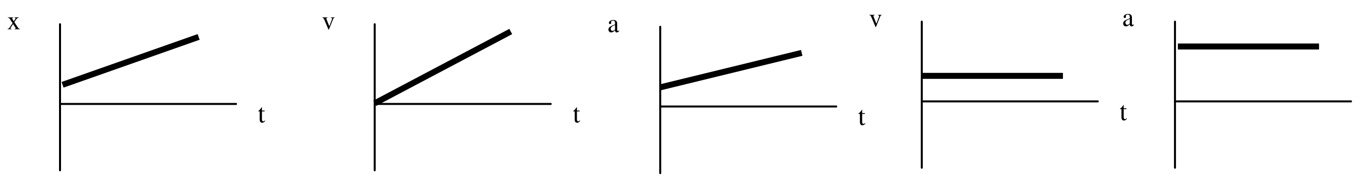
Some extra graphical representation practice.

1. Sketch the shape of the velocity-time and acceleration-time graphs for each of these position-time graphs. Describe the motion in words.





2. Consider the following graphs (look carefully at the axes!). Which graph(s) represent motion with constant velocity (there may be more than one correct answer)?



3. A car begins at rest and accelerates forward (with constant acceleration) for 3 s. It then moves with constant velocity for 5 s, then slows to a stop in 3 s. It remains stopped for 4 s. Then it backs up, returning to its original position in a similar manner as it moved forward (speeding up, moving with constant velocity, then slowing to a stop). Sketch position, velocity, and acceleration-time graphs for this motion. Indicate on the graphs the time at which the object reverses direction.