Physics 342, Homework 2

1: 2-3 (lmedium) - Hint - Eliminate t between y(t) and x(t) then equate y and x at the point the $tan(\beta)$ line is crossed by the parabola traced out by the particle.

2: 2-4 (short) Hint - how many balls are in the air at any one time?

3: 2-8 (medium) hint - think quadratic in time for y = h. Also $\pi/4$is the angle that maximizes the range. Do not due this the way the solution manual does, that is counter intuitive.

4: 2-9 (longer) The book wants you to do this for just vertical motion.Assume kv_0/g is small and taylor expand your result.

5: 2-15 (long) use tables for the integral, switch to a one dimensional inclined plane problem. Use the fact that if you make x positive in the direction of motion then the acceleration is also positive. Use appendix E to look up the integrals. E.4c to be precise. Use v(0)=0 to determine the integration constant. You can look up the integral for the hyperbolic tangent).

6: 2-29 (medium or short, think it through) Hint - an 8 percent grade is not an angle of 8 degrees, the angle is the tangent of .08 or 4.6 degrees. This problem is also a classic case of - ”It is waaaay longer to cheat and use solutions than to think”.

7: 2-30 (short) Hint - you’ll end up with a quadratic.