Second Chance Exercise - "Soccer Problem" (2D Kinematics / Projectile Motion)

This second chance exercise is for people who want to review 2D constant-acceleration kinematics including the quadratic formula.

If one of your lowest three exam problem grades was on the "soccer problem", you may complete it and turn it in to earn an extra homework grade, which we will help you earn 100% on. This will help your end-of-term average.

If you do this, it is due on the last day of recitation.

This exam problem covered 2D motion. In it, you needed to determine the initial position a soccer ball was kicked from given knowledge of its path.

1. Compare this problem to the "hiker and boot" problem from Week 3, Recitation 1 at `https://walterfreeman.github.io/phy211/recitation/week3/recitation-2D-motion.pdf`. How is it similar to that problem, and how is it different?

2. Find a problem on Homework 2 that is similar to this one. How is the same, and how is it different?

3. Compare the way you used the quadratic formula in this problem to the "roadrunner problem" from Homework 1. How did you determine which root to use in that problem, and how did you determine it here?

4. The first practice exam is here: `https://walterfreeman.github.io/phy211/practice-exam-1.pdf`.

   (a) Find two problems on the practice exam that involve motion in two dimensions.

   (b) How is each of those problems similar to the "soccer problem" you had on Exam 1? How is each of them different?

5. Write a problem that evaluates students' ability to analyze motion in two dimensions, similar to the "soccer problem" from Exam 1 and the two problems you identified on Practice Exam 1. Just like the "soccer problem", this should involve the use of the quadratic formula where you will need to consider which root you will need to choose. Then solve it. *(Particularly good problems here will earn extra credit!)*