

# ENGR 125CS

Homework Essay #3:

Due: Wednesday 15 November at the start of class

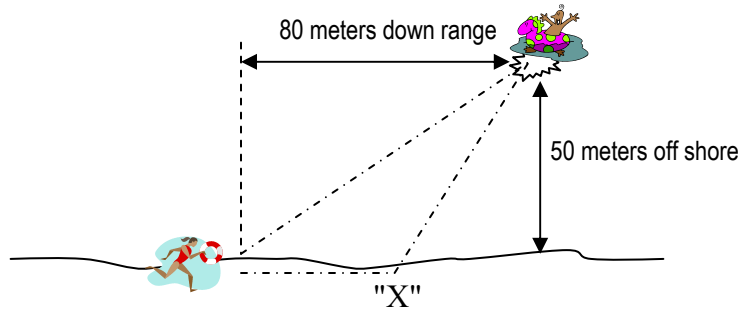
One aspect of *how* engineers do what they need to do involves deductive reasoning. For this essay you are asked to consider how to solve a simple real-world problem and explain your proposed solution.

A lifeguard needs to reach a struggling swimmer as quickly as possible. No boat is available.

The struggling swimmer is 80 meters down the beach and 50 meters off shore, relative to the lifeguard.

The lifeguard can run along the beach at a speed of **4 meters per second**, and she can swim through the water at a speed of **1 meter per second**.

In order to reach the swimmer in as short a time as possible, how far along the shore should she run (point "X") before jumping in the water and swimming?



Although it is unlikely that the lifeguard would take the time to calculate the optimal mathematical solution before she goes to aid the swimmer, I would like you to imagine you could "press the pause button" and find the true solution for her.

It is possible to solve this problem analytically (i.e., using mathematical equations), by trial-and-error (guess and check), and by a variety of approximations. Choose an approach to get the correct numerical answer, then write your essay as an explanation in words of how you solved the problem. You can show equations to illustrate your solution, but the explanation must be largely in written words.

- Your name, class, date, and "Essay #3" at the top of the first page.
- Introductory paragraph – expresses the problem statement, how you went about finding the solution, and the concise set of points you will cover in the rest of the essay.
- Supporting paragraphs – explaining your solution. Each paragraph must include a topic sentence.
- Concluding paragraph – a short, final paragraph to summarize your method and ideas.

Your essays are to be prepared using a word processor and good quality printer. Use double-spaced lines with margins of one inch on each edge of the sheet. The length should be about one page.

Remember, in ENGR 125 there are NO LATE SUBMISSIONS ACCEPTED. If you know you will be missing class on 11/15, please make arrangements in advance by email contact with the instructor.

Grading will follow the 3-point scale used previously for grading essays in this course.