

MTH 1210, FALL 2013
DR. GRAHAM-SQUIRE

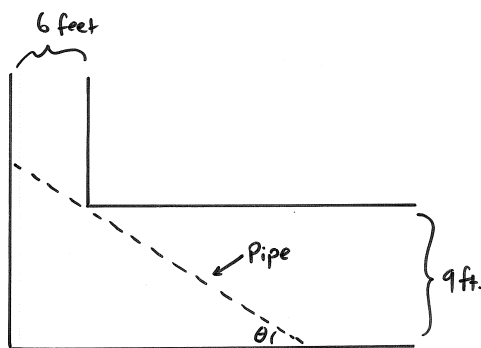
SECTION 6.3: IN CLASS ACTIVITY

1. NAMES

2. INSTRUCTIONS

Read the problem given below, then work on it with the other members of your group. You should give a complete answer with all of your work shown for each question. It is fine for different people to work on different parts of the question, but you should check each other's work since everyone in the group will receive the same grade for the assignment. If you have any questions, ask the other members of your group first. If all of you are stuck, everyone in the group must raise their hand in order to get help from the professor. Attach this as a cover sheet to the work you turn in.

Exercise 1. A steel pipe is being carried down a hallway that is 9 ft wide. At the end of the hall there is a right-angled turn into a narrower hallway 6 ft wide. See the figure below.



- (a) Explain why the length of the pipe in the diagram is modeled by the function

$$L(\theta) = 9 \csc \theta + 6 \sec \theta.$$

Hint: It may be useful to split the pipe into two triangles.

- (b) Graph the function L for $0 < \theta < \pi/2$ using a graphing utility. Sketch the graph on your answer sheet.

- (c) Use the graph to find the longest possible pipe that can be carried around the corner. Explain (in words, using sentences) your reasoning for how you got your answer from the graph and why it makes sense. (Note- make the explanation thorough, as this will be a large chunk of your grade for the assignment).