Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points: \_\_\_\_\_\_

Suppose there is a hallway with a turn (see the figure below). The hallway is 4ft wide. In this module, we will try to figure out the longest pipe we can move through the turn. For simplicity’s sake we will assume the pipe is very narrow, rigid, and that it must be kept horizontal.

1. Draw a picture of the situation.

4ft

L

4ft

2. Where the pipe touches the corner at the turn, it makes an angle with each of the walls. Pick one to focus on.

3. Represent L as a function of the angle you choose in part 2. (Hint: break L into two parts, and represent each part using 4ft and an appropriate trigonometric function of the angle).

4. Graph the length L as a function of the angle in Desmos (x-coordinate should be the angle, and y-coordinate should be L)

5. What POINT should you look for in the graph if you are interested in finding the longest pipe you can move through the corner? Why?

6. Use the feature of Desmos to estimate the value of the angle and L of the POINT, and this is the answer to the original question.