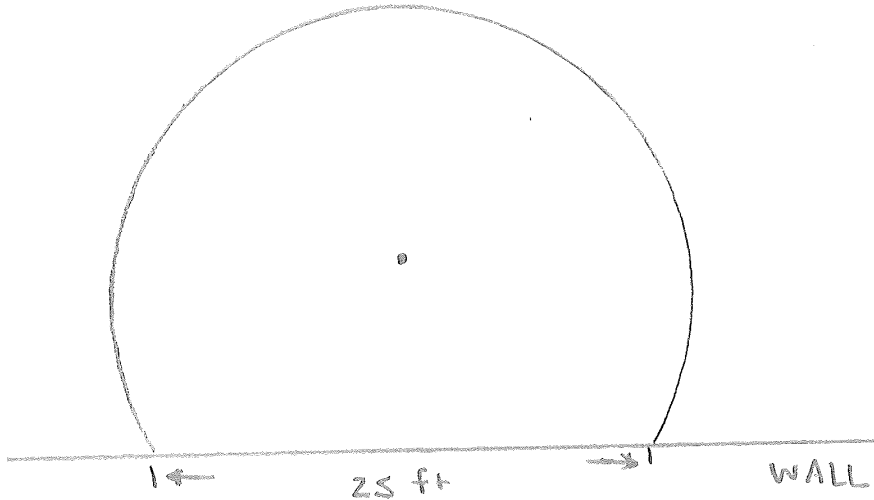


Geometry of Circles & Some Calculus

1. A zoo enclosure is made using 100 ft of fencing in a circular arc, with 25 feet of wall. How much area is enclosed?



2. Suppose you wish to enclose 1000 sq ft, using the same 100 ft of fence and some length of wall. Can you do it? What length(s) of wall will work?

3. Suppose you make 3 sides of a rectangle out of the fence. What is the most area that can be enclosed, using as much wall as you like? (Use calculus!)

4a. A motorboat travels in an exact circular arc. It begins from the dock going north, and turns to the west. (It ends up going exactly westward.) If it goes 20 mph and it takes 2 minutes to make this turn, how far from the dock is it when it is heading due west?

4b. The boat begins the same maneuver in open water, starting at a buoy. This time, however, it goes through an entire circle, and keeps turning, again ending up headed due west. If the boat travels at 20 mph and takes 6 minutes to make this turn, how far from the buoy is it at the end?