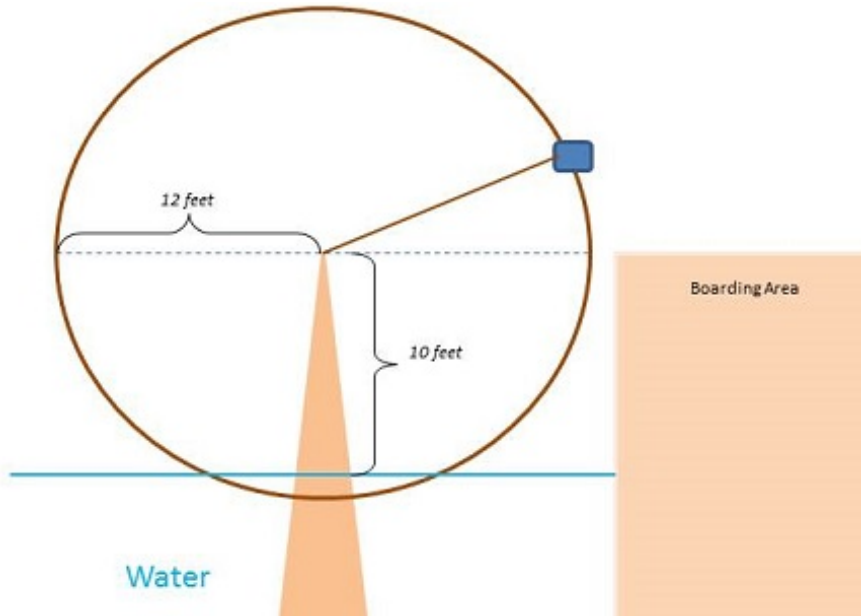


PRACTICE QUESTIONS FOR EXAM IV

An amusement park has a water ride set up in the form of a dunking wheel as shown in the diagram below. Denae gets into a gondola at the boarding area and rotates around the wheel.



1. If it takes two minutes for Denae to complete two-thirds of one complete rotation, what is the angular speed of the water wheel?
2. How far in feet will Denae travel around the water wheel in one complete rotation?
3. When Denae has traveled through an arc of length 33.24 feet from the boarding area, she is in Quadrant III. Is Denae rotating in the clockwise or the counterclockwise direction?
4. Suppose the Denae has traveled four-fifths of her first complete rotation.
 - (a) What is the radian measure of the angle she has rotated through?
 - (b) What is the slope of the beam connecting Denae's gondola to the center of the water wheel?

5. Consider the position where Denae's gondola first touches the water.
- (a) What is the x coordinate of the gondola at this point?

 - (b) How far to the left of its starting point will the gondola be at this point?

 - (c) Let θ be the radian measure of the rotation angle formed by the initial and terminal rays at this point. What is the value of $\tan(\theta)$?
6. At its lowest point, the ferris wheel is four feet above the bottom of the water feature. When Denae has rotated through an angle of measure $\theta = 2.77$ rad, how far is she above the bottom of the water feature?