

Name _____ Instructor name _____

You must show and explain all work neat and organized to receive credit. Please show each step for calculations. YOU MUST TURN IN THIS SHEET to have your assignment graded.

1. Assume the radii used for the experiment are 10.00 cm and 17.00 cm . Calculate the value of Δx for each of these radii. Remember that the circumference of the circle is divided into 30 equal parts. (4 pts)

NOTE: Next question must be solved using only symbolic algebra.

2. (a) During the experiment, if you could triple the breakaway magnetic force with all other quantities left unchanged, what is the new value for the critical velocity if it was v_0 initially?
(b) Now, if you halved the radius with all other quantities left unchanged, what is the new critical velocity if it was v_0 initially?
(c) If during the experiment, critical velocity quadrupled with all other quantities left unchanged, what is the new breakaway force if its magnitude was initially F_0 ? (12 pts)

3. Compute the Moon's centripetal acceleration in its orbit around the Earth. Recall that the Moon orbits the Earth every 28.0 days and that it is about 240000 miles from the Earth. What force causes this acceleration? Please first report the answer using symbolic algebra and then the numerical value. Be sure to convert to *SI units*. (4 pts)