

Hi everyone,

No feedback from you this week, except for the results of SuperQuiz 2, which illustrate that many haven't mastered rotational mechanics as needed for the final exam: out of 10 points, 10 AM class (6.7 ± 2.2) and 1 PM class (4.9 ± 2.2). The bad news is also the good news: that many students are in the same situation, and we can improve with the last SuperQuiz 3 on Wednesday: I will count the two highest grades of the three SuperQuizzes toward your grade. So you have another opportunity to show me that you can solve these problems. Please look at the solutions to SuperQuiz 2 and fully understand the concepts and the protocol to solve the problem.

I have posted the official PS #10 and encourage you to give it some time before your return.

In the last quiz and final exam, I wish to emphasize that you *must* identify the concept at play in the question and then act on it. Many students did not identify dynamics at the beginning of the "driving over the hill," and did not do the steps: Free Body Diagram (with well-labeled forces), and the vector sum of the forces = mass * (centripetal) acceleration. If you did these things, you got a point for each, even if you didn't solve the problem. However, if you didn't do this, likely you got no points. I can't *make* your hand do this at the start of a problem. However, I want to be clear that you will be graded for this. Please let me know if you have any ideas to help empower students to take this very important step in problem solving.

In my opinion, we're in an excellent position academically. In the past I've started circular motion in week 9 or 10, as the other 141 classes are doing now, and really had to slam through it quickly, learning new material on the last day of class. We are presently done with the curriculum. We've covered all the concepts, and all but two examples: the ladder problem, and the canonical pendulum (PS #10, question #4, tetherball, and frictionless banked freeway ramps). Now we have a week to do these examples, patch the holes in our understanding, and review the old stuff (exams, problem sets, etc.) before the final exam. But we need to do this as our exam is on Monday. Here is what we are going to do:

- 1) You have a few videos to watch for Monday. I'll post them, likely this evening. One is the "big picture" for rotational mechanics, and the other is the canonical pendulum.
- 2) Tuesday, I will collect PS #10, question #4 at the *beginning* of class, because this is an important part of PHYS141 curriculum.
- 3) Wednesday, you will take SuperQuiz 3, which may include the material from SuperQuiz 2 and the canonical pendulum, as well as other rotational mechanics.
- 4) Thursday and Friday: I will administer a 30-minute multiple choice test that does *not* count toward your grade. The intention is to show me (and you) what you understand and we will review it so you know what concepts you need to work on. I think that this will be fun, and will also improve your performance on the final exam. As I'm sure you'll all have filled out the survey by then, I'll bring food.
- 5) My office hours: Tuesday, Wednesday, and Thursday, SUSTAIN has food and good company from noon – 4:00 PM in 38-121. Please come and bring any freshmen friends. You don't have to join SUSTAIN, but there will be people there to tell you about it if you are curious. I'll be holding my Tuesday noon office hour *there* in 38-

121. Additionally, I'm holding two *extra* office hours in 38-121 at noon on Wednesday and Thursday.

- 6) Sunday, Dec. 7, Office Hour: I'll be available outside my office from noon-2:00 to talk physics and offer help. I will not answer questions about what to expect from the final exam. Please direct any questions about the exam to me via Email, and I'll respond in a communication to all.

Students seem most comfortable using conservation of energy for rotational systems in order to find everything including torque and angular acceleration through the use of finding the amount of elapsed time. Excellent – it's a wonderful method. But what if the problem didn't ask you for the final angular velocity after say 4 meters of travel (like in the SuperQuiz), what would you do? Well, as long as air resistance doesn't come into play, angular acceleration won't change as you roll down a hill, so you can pick any distance you like and just do the same calculation!