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PHYS 211X
HW 9, Due Friday, 3/31/2023 23:59; §11 P: #52, 54, 71, 81 §12 Q: #7, 9 P: #32, 58, 65, 75, 82

Chapter 11

Problems

52.

54.

71.

81.

Chapter 12

Questions

7. Roll both balls. Since the mass is distributed further from the center of mass on the hollow ball, it will roll slower than the solid ball.

9. a. The torque is positive.

   b. (iii) hold steady. Since there is no friction or opposing force, the angular velocity won't decrease.

Problems

32. Equilibrium:

$$\begin{aligned} \tau &= \tau \\ r_{cat}F_{cat} &= r_{tuna}F_{tuna} \\ r_{cat}(4.0kg)(9.8m/s^2) &= 4.0m(9.8m/s^2)(2.0kg) \\ r_{cat} &= \frac{4.0m(9.8m/s^2)(2.0kg)}{(4.0kg)(9.8m/s^2)} \\ r_{cat} &= \boxed{2.0m} \end{aligned}$$

58.

$$F_{ft} + F_{fb} - F_g = 0$$

65.

75.

82.