
Total time: 45 min Total Points: 10 pt
Student Name:

Answer the questions in the spaces provided on the question sheets. If you run out of room for an answer, continue on the back of the page.

- (1 pt) 1. You apply a force \vec{F} at the door knob at location \vec{R} from the hinges as shown in Fig. ??
 Draw the vector for the torque $\vec{\tau}$ due to that force on the door. **Ans.** \uparrow

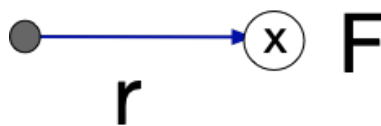


Figure 1: Torque on a Doorknob

- (1 pt) 2. An object rotates around a circle with a radius r . At one point, the vectors for its position and its angular speed are as given in Fig. ?.?. Draw the vector for its velocity at that moment. **Ans.** \searrow

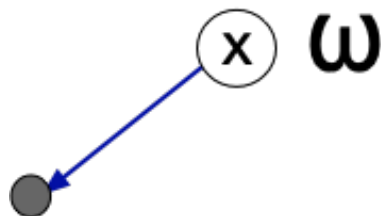


Figure 2: Rotating Object

- (8 pt) 3. An 82.0 kg-diver stands at the edge of a light 5.00-m diving board, which is supported by two narrow pillars 1.60 m apart, as shown in the figure. Treat the board as massless.
- (a) (2pt) Draw all the forces acting on the board.

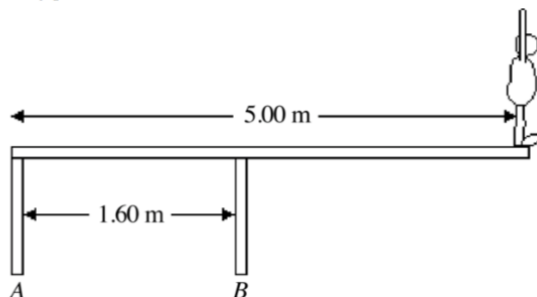


Figure 3: Board (Problem ??)

- (b) (2pt) Find the magnitude and direction of the force exerted on the diving board by the person. **Ans.** 803.6 N
- (c) (2pt) Find the magnitude and direction of the force exerted on the diving board by pillar B. **Ans.** 2511 N
- (d) (2pt) Find the magnitude and direction of the force exerted on the diving board by pillar A. **Ans.** 1708 N