Paper Homework No. 10 (Spring 2018)

PHYS 203A: College Physics

Due date: Friday, 2018 Apr 27, 2.00pm, in class

(Name) (Signature)

Instructions

1. Your submission should include only this page. Other forms of submissions will not be accepted. Please print this page, and write your solution on the back side.
2. Show your thought process in detail and organize it clearly.
3. Make sure your answer has the correct units and the right number of significant digits.

Question

The Atwood machine consists of two masses $m_1 = 10.0\,\text{kg}$ and $m_2 = 20.0\,\text{kg}$ connected by a massless (inextensible) string passing over a pulley of mass $M = 5.0\,\text{kg}$ in the shape of a uniform disc of radius R such that it has moment of inertia $I = MR^2/2$. See Figure 1. Determine the magnitude of the resultant acceleration of mass m_1.

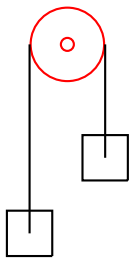

Figure 1: Atwood machine.