Paper Homework No. 07 (Spring 2018)

PHYS 205A: University Physics

Due date: Wednesday, 2018 Mar 28, 12.00pm, 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

Consider a block of mass $m = 25\,\text{kg}$ being pulled by a force $F_{\text{pull}} = 80.0\,\text{N}$, exerted horizontally, such that the mass moves on a horizontal surface with coefficient of kinetic friction $\mu_k = 0.30$. Assume that the mass starts from rest.

1. Determine the work done by the gravitational force acting on the block, while it has moved a horizontal distance $d = 10.0\,\text{m}$ starting from rest.
2. Determine the work done by the normal force acting on the block, while it has moved a horizontal distance $d = 10.0\,\text{m}$ starting from rest.
3. Determine the work done by the force of friction acting on the block, while it has moved a horizontal distance $d = 10.0\,\text{m}$ starting from rest.
4. Determine the work done by the force of pull F_{pull} acting on the block, while it has moved a horizontal distance $d = 10.0\,\text{m}$ starting from rest.
5. Using work-energy theorem determine the final velocity of the block after the mass has moved a horizontal distance $d = 10.0\,\text{m}$ starting from rest.