PHY 2048-S4, Fall 2009

Examination #2
October 20, 2009
Instructor: Beatriz Roldan Cuenya

Name_____ID_____

Please answer all questions.

#1_____

#2_____

#3_____

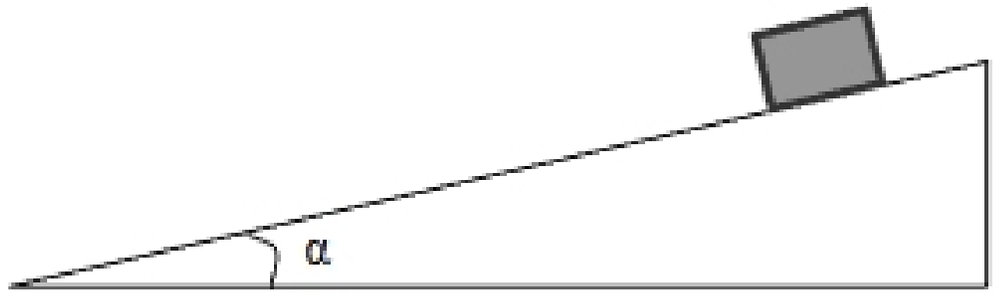
#4_____

Total: _____

Show all work and enter answers in boxes, if provided.

1. A 0.2 kg block slides along an incline plane with coefficient of kinetic friction μ_k=0.2.

(a) What should be the minimum angle of the incline in order to have the block slipping down?
(b) If the angle of the incline plane is 30°, calculate the work done by the frictional force when the block slides down the incline a distance of 3 m.
(c) What is the work done by the gravitational force during the 3-m downward displacement?
(d) What is the minimum external force parallel to the surface of the incline plane that will start the block moving up the incline? Assume a 30° incline plane.



(a)	(b)	(c)	(d)

2. The figure below shows a block of mass $M_2 = 4$ kg on a frictionless plane inclined at angle $\theta = 40^o$. It is connected by a cord of negligible mass to a block of mass $M_1 = 1$ kg on a horizontal frictionless surface. The pulley is frictionless and massless. Calculate:

(a) Magnitude of the normal forces on each block.
(b) Acceleration of the boxes.
(c) Tension in the connecting cord.

(a)	(b)	(c)