Physics 203 - Summer Quiz 4 Jun. 10, 2015

Name :_____

Time: 15 minutes. Make sure you show all the procedures of computation: answers without procedures will not receive any credits. Answers must be expressed with SI units.

FORMULAS

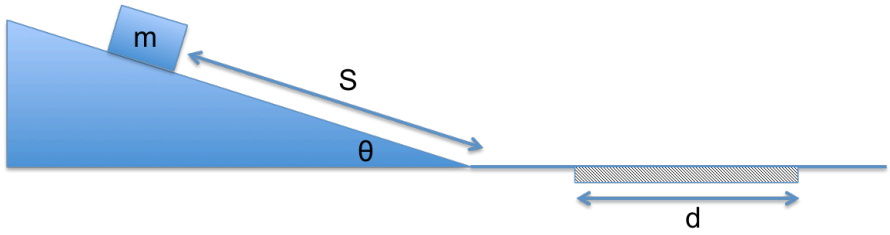
$$v = v_o + at$$
$$x - x_0 = \frac{1}{2}(v_o + v)t$$
$$x = x_0 + v_o t + \frac{1}{2}at^2$$
$$v^2 = v_0^2 + 2a(x - x_0)$$

Work and Energy:

$$W = fd\cos\theta$$
$$PE = mgh$$
$$KE = \frac{1}{2}mv^2$$
$$W_{net} = \Delta KE = \frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2$$
$$KE_i + PE_i = KE_f + PE_f$$
$$W_{gravity} = -mg(h_f - h_i)$$
$$W_{nc} = \underbrace{\left(\frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2\right)}_{\Delta KE} + \underbrace{(mgh_f - mg}_{\Delta PE}$$

1. A 47-g golf ball is driven from the tee with an initial speed of 52 m/s and rises to a height of 24.6 m. Neglect air resistance and determine the kinetic energy of the ball when it reaches 8 m below its highest point. (1pt)

2. An object slides down a slope to the ground and passes through a kinetic friction region (μ_k = 0.2). The traveled distance on the slope S = 3.0m, friction region distance d = 2.0m, θ=30° and m=5kg are given. All region except the distance d (shaded region) is frictionless.



a) Find the speed when it reaches the ground. (0.5pt)

b) Determine the final speed after it passes the friction region. (0.5pt)

c) Find the acceleration while it is passing the friction region. (0.5pt)

d) What is the time that it takes in the friction region? (0.5pt)