Written Homework #6 Physics 131 Spring 2009

Due on Friday 13 March 2009 at the beginning of lecture.

Write down your name and student ID number.

A 0.5 kg ball initially at rest is subject to three forces:

1. F_1 has a magnitude equal to 5.0 N and points 36.9 degrees above the horizontal direction (relative to the positive x direction),
2. F_2 has a magnitude equal to 2.0 N and points to the left (negative x direction),
3. F_3 has a magnitude equal to 4.0 N and points straight down (negative y direction).

Given these forces, answer the following questions:

a. Draw a free-body diagram showing the forces acting on the ball. Be sure to draw vectors with the correct lengths. Determine the x- and y-components of each force and label those values on your diagram.

b. Calculate the x- and y-components of the net force acting on the ball.

c. Calculate the x- and y-components of the ball's acceleration.

d. Calculate the total distance traveled by the ball after 3.0 s.

Show your work to get full credit.