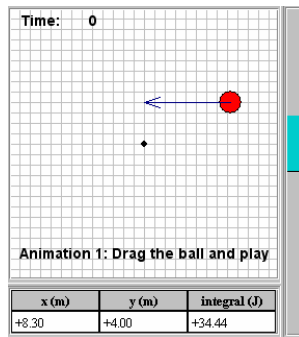# Worksheet for Exploration 7.6: Different Interactions

The animations show a red ball that you can drag with the mouse **(position is given in meters, time is given in seconds, and energy on the bar graph is given in joules)**. The bar graph shows the negative of the force on the ball integrated over the displacement from the origin. This is the negative of the work done on the ball to get it to this position. This integral, when the force is conservative, is also the potential energy associated with the ball when it is at this position. Also shown is a table with a calculation of position and the negative of the work. Restart.

| x (m)	y (m)	integral (J)
+8.30	+4.00	+34.44

Animation 1: Drag the ball and play

a. Briefly describe the force in each animation.
b. Which of the forces is conservative? Why?
     For parts a, b complete your answers for each interaction in the table below.

	Interaction 1	Interaction 2	Interaction 3	Interaction 4	Interaction 5
Description					
Conservative					

c. For the conservative forces, draw the potential energy function.
     i. Several graphs have been provided below to make your sketch. Or see option ii.
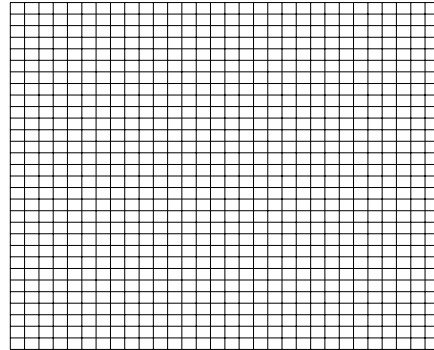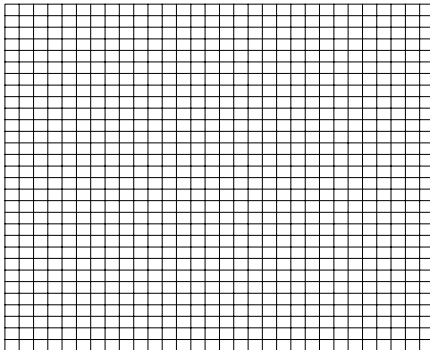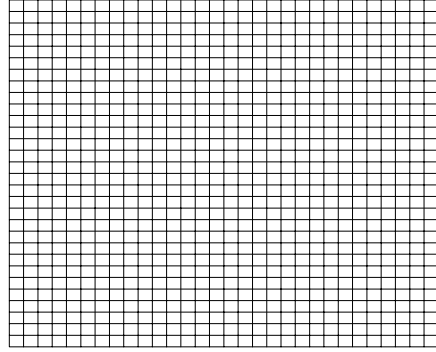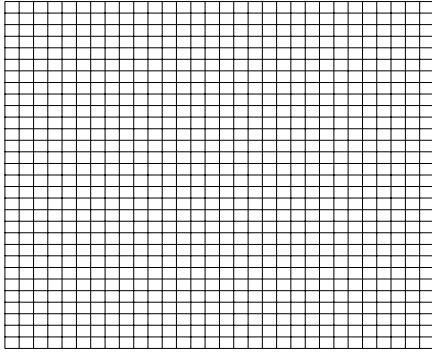
ii. You may get more out of this by using a plotting program (excel, origin, maple, etc) that has 3D plotting features. The potentials may be plotted as surfaces as a function of x and y. To make such a plot (surface plot) you would need a "Matrix" of potential values at evenly spaced xy positions. Try this for one of the conservative potentials. You may need to talk to your instructor for help.