## Worksheet for Exploration 5.7: Enter a Formula, $F_x$ and $F_y$ , for the Force



This Exploration allows you to choose initial conditions and forces and then view how that force affects the red ball. You can right-click on the graph to make a copy at any time. If you check the "strip chart" mode box, the top graph will show data for a time interval that you set. Note that the animation will end when the position of the ball exceeds +/-100 m from the origin. <u>Restart</u>.

Remember to use the proper syntax such as -10+0.5\*t, -10+0.5\*t\*t, and -10+0.5\*t^2. Revisit Exploration 1.3 to refresh your memory.

For each of the following forces, first describe the force (magnitude and direction) and then predict the motion of the ball. How close were you? Don't forget to determine how the initial position and velocity affect the motion of the ball for each force.

Fx	Fy	<b>x</b> 0	<b>X</b> 0	V <sub>0x</sub>	V <sub>0x</sub>
1	1	0	0	0	0
1	-1	0	0	0	0
-x	-2*y	10	10	0	0
-0.5*vx	-9.8-0.5*vy	-20	0	20	20

- a. Describe the motion for the first force.
  - i. Comments on the shape of the path the ball follows.
  - ii. Discuss the velocity of the object.

iii. Discuss the acceleration of the object.

- b. Describe the motion for the second force in the table i. Comments on the shape of the path the ball follows.
  - ii. Discuss the velocity of the object.

iii. Discuss the acceleration of the object.

- c. Describe the motion for the third force.
  - i. Comments on the shape of the path the ball follows.
  - ii. Discuss the velocity of the object.

iii. Discuss the acceleration of the object.

- d. Describe the motion for the last force.i. Comments on the shape of the path the ball follows.
  - ii. Discuss the velocity of the object.

iii. Discuss the acceleration of the object.