Name: _____

Sketch Cartesian coordinate systems on the back of this sheet as needed. The origin should be $(0, 0)$; no scale is necessary. *Sketch* means you don't need a ruler, etc., but a curve should not look like a line, or vice versa. All lines/curves should end with an arrowhead.

1. Sketch a d *vs.* t (*distance vs. time*) graph for each of the following situations: (25 pts)

   (a) An object at rest

   (b) An object moving in a positive direction with a constant speed

   (c) An object moving in a negative direction with a constant speed

   (d) An object that is accelerating in a positive direction, starting from rest

2. Sketch the v *vs.* t (*velocity vs. time*) graph for each of the situations described above. (25 pts)

3. What is the shape of a *velocity vs. time* graph for any object that has a constant acceleration? (20 pts)

4. Consider a ball thrown straight up. It goes up, then falls down. (Start by defining the coordinate system. Is up or down the positive y direction?) What is the acceleration of the ball on the way up? What is the acceleration when it reaches its highest point? Is the acceleration positive or negative? What is the acceleration of the ball on the way down? Is the acceleration positive or negative? (25 pts)

5. What are the objectives of this experiment? (5 pts)