Activity: Elliptic Curve Experiments I **Name:**_____

The graphs below show three elliptic curves $y^2 = x^3+5x+10$, $y^2 = x^3+10$, and $y^2 = x^3-5x$. For each curve E, determine if each statement below is true or false.

1. If $(x,y) \in E$, so is $(x,-y)$.
2. If $(x,y) \in E$, so is $(-x,y)$.
3. If P and Q are points on E, then the line through P and Q intersects E in a third point R. (Try some examples with a straightedge.)
4. There is a line that intersects E in four points. (See if you can find one using a straightedge.)
5. The infinite component of E has two inflection points.
6. There is more than one line that intersects the curve in only one point. (Can you find more than one?)