Function Families Worksheet #2
Algebra 2: Absolute Value

Graph each "family" of equations on a graphing calculator. Try to discover what makes each one different. Then try to sketch them on the coordinate plane. Use different colors to differentiate between the equations. Be sure to compare the parts of the equation to the graph. Then, in your notebook, write what you have discovered about the equations.

1. $f(x) = |x|$
   $f(x) = |x| + 1$
   $f(x) = |x| - 4$
   $f(x) = |x| + 3$

2. $f(x) = |x + 2|$
   $f(x) = |x - 2|$
   $f(x) = |x + 5|$
   $f(x) = |x - 3|$

3. $f(x) = |0.5x|$
   $f(x) = |2x|$
   $f(x) = |3x|$
   $f(x) = |6x|$

4. $f(x) = |x + 4|$
   $f(x) = |x| + 4$
   $f(x) = -|x + 4|$
   $f(x) = -|x| + 4$

5. $f(x) = -|x| + 1$
   $f(x) = -|x + 1|$
   $f(x) = -|x - 3|$
   $f(x) = -|x| - 3$

6. $f(x) = |x + 1| + 2$
   $f(x) = |x + 1| - 2$
   $f(x) = |x - 1| + 2$
   $f(x) = |x - 1| - 2$

For each equation below, identify the coordinates of the vertex of the graph.
Do this without actually graphing.

1. $f(x) = |6x|$

vertex:_____

2. $f(x) = -|2x|$

vertex:_____

3. $f(x) = |x + 7|$

vertex:_____

4. $f(x) = |x| - 9$

vertex:_____

5. $f(x) = |x + 8|$

vertex:_____

6. $f(x) = |x - 6| + 8$

vertex:_____

7. $f(x) = |x + 10| + 12$

vertex:_____

8. $f(x) = |x + 7| - 8$

vertex:_____