Algebra II Worksheet on Absolute Values Using the Free Math Add-In Within *Word 2007*

1. Using the ‘*Plot in 2D’* command, graph each and label the vertex of the “Vee.” Pay close attention to the pattern that is trying to emerge.

1a) $y=abs(x)$

1b) $y=abs(x-2)$

1c) $y=abs\left(x\right)-3$

1d) $y=abs\left(x-5\right)+2$

1e) $y=3 abs\left(x+1\right)-5$

1f) $y=2 abs\left(3 x-5\right)+7$

2. The following graph uses the ‘*Animate’* command. Draw three distinct graphs using the ‘*Plot in 2D’* command. For each graph, include the values of the free parameters *a*, *b*, and *c* and label the vertex. At least one of your graphs needs to be an inverted “Vee.”

 $y=a abs\left(x+b\right)+c$

3. If the equation contains a single pair of absolute value symbols, then the resulting graph will resemble one “Vee.” What happens with two absolute values? Graph each of these using the ‘*Plot in 2D’* command. Label all of the vertices.

3a) $abs\left(y\right)=abs\left(x\right)$

3b) $y=abs\left(x\right)-x$

3c) $y=x-abs(x)$

3d) $abs\left(x\right)-abs\left(y\right)=4$

3e) $abs\left(x\right)+abs\left(y\right)=5$

3f) $y=abs\left(x-3\right)-abs\left(x+5\right)$

4. Consider the graphs generated with the equations in 3d and 3e.

4a) For the graph of 3d, locate the point *(0, 4)*. What happens when you plug *(0, 4)*, the coordinate point, back into the original equation? Do you get equality?

4b) What happens when you plug *(0, -4)*, the coordinate point, back into the original equation? Do you get equality?

5. Find two points on the graph of 3e that do not check.