PIECEWISE FUNCTIONS AND ABSOLUTE VALUE
"I Fall to Pieces"

Rewrite the following functions into simplified piecewise function without absolute value, if in the original. Produce a graph of each using an appropriate domain. The first function is already simplified and ready to graph.

<u>Polynomial family</u>   <u>Graphs (make in two columns)</u>

1. $f(x) = |x| = \begin{cases} x & x \geq 0 \\ -x & x < 0 \end{cases}$

2. $f(x) = |2x + 4| =$

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

4. $f(x) = |(x-1)(x+2)(x-3)| =$

<u>Rational family</u>

5. $f(x) = \dfrac{3x + |x|}{x} =$

6. $f(x) = \dfrac{1}{x} - \dfrac{1}{|x|} =$

7. $f(x) = \dfrac{x^2 - 1}{|x - 1|} =$

8. $f(x) = \dfrac{\sqrt{(x-3)^2}}{x - 3} =$

9. $f(x) = \dfrac{|x - a|}{x - a} =$

10. $f(x) = \dfrac{|x - a|}{a - x} =$

11. $f(x) = \dfrac{x - a}{|x - a|} =$

12. $f(x) = \dfrac{a - x}{|x - a|} =$