

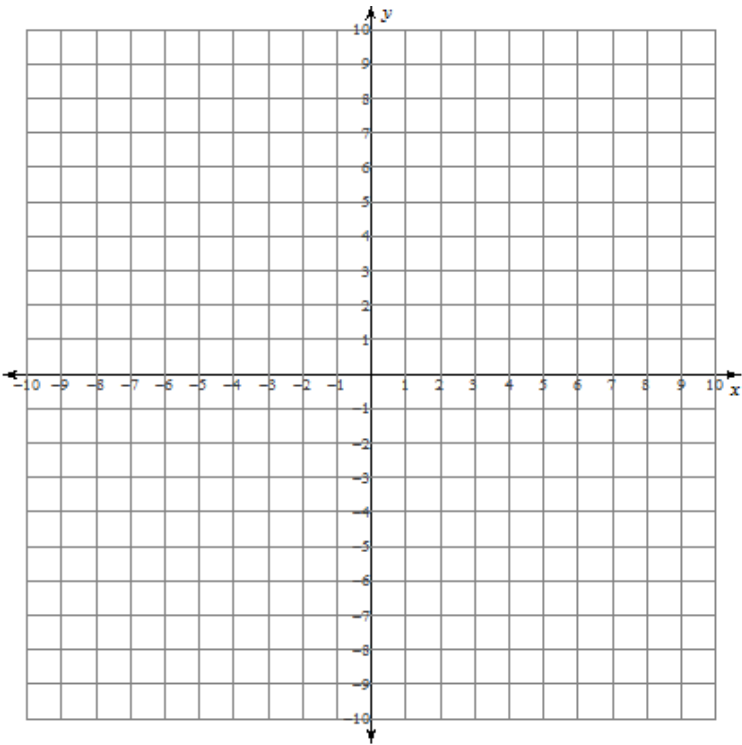
Investigation: Absolute Value Functions

To explore the similarities and differences between linear, quadratic and absolute value functions.

Part A: Compare Linear Functions with Corresponding Absolute Value Functions

- 1. Consider the functions $f(x) = x$ and $g(x) = |x|$. Complete the table of values.
- 2. Use the coordinate pairs to sketch graphs of the functions on the same grid.

x	f(x)	g(x)
-3	-3	
-2	-2	
-1	-1	
0	0	
1	1	
2	2	
3	3	

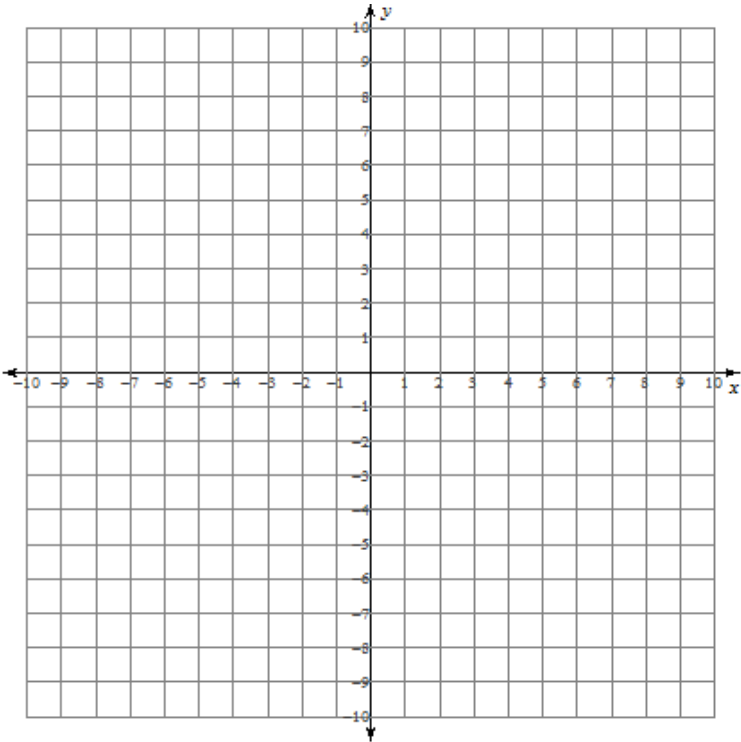


- 3. Which parts of the two graphs are similar and which parts are different?
- 4. Explain why the absolute value relation is a function.
- 5. Describe the shape of the graph of $g(x)$.
- 6. If you could sketch the graph of $g(x)$ using two linear functions, what would they be? State any restrictions on the domain and range of each function.

Part B: Compare Quadratic Functions with Corresponding Absolute Value Functions.

- 1. Consider the functions $f(x) = x^2 - 4$ and $g(x) = |x^2 - 4|$. Complete the table of values.
- 2. Use the coordinate pairs to sketch the graphs of $f(x)$ and $g(x)$ on the same grid.

x	f(x)	g(x)
-3	5	
-2	0	
-1	-3	
0	-4	
1	-3	
2	0	
3	5	



- 3. For what values of x are the graphs of $f(x)$ and $g(x)$ the same? Different?
- 4. If you could sketch the graph of $g(x)$ using two quadratic functions, what would they be? State any restrictions on the domain and range of each function.
- 5. Describe how the graph of a linear or quadratic function is related to its corresponding absolute value graph.