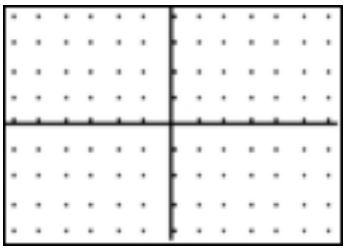
Worksheet- Directory of Graphs

An important topic in the study of Algebra is the nature of the graphs of certain **basic functions**. Below is a list of eight basic functions for which you need to be able to sketch (without the use of a graphing calculator), and state the domain and range of the function. Sketch each function without your calculator. If necessary, make a "T-table" to find points that are on the function's graph. Then, for each function, state the domain and range using interval notation. Also, for practice, state the intervals (in interval notation) where the function is greater than zero, where the function is less than zero, and intervals where the function is increasing and where it is decreasing

1. Constant function: $f(x)=k$

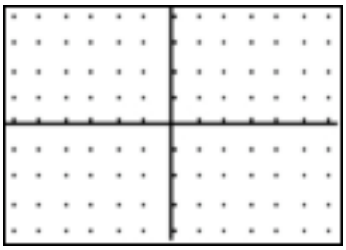


Domain: _____ Range: _____

$f(x)>0$: _____ $f(x)<0$: _____

Inc: _____ Dec: _____

2. Identity function: $f(x) = x$

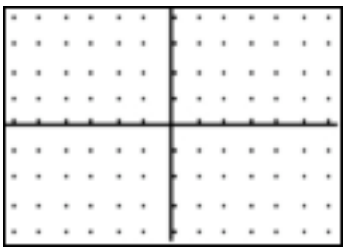


Domain: _____ Range: _____

$f(x)>0$: _____ $f(x)<0$: _____

Inc: _____ Dec: _____

3. Absolute Value function: $f(x) = |x|$

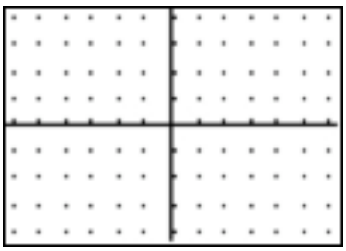


Domain: _____ Range: _____

$f(x)>0$: _____ $f(x)<0$: _____

Inc: _____ Dec: _____

4. Quadratic function: $f(x) = x^2$

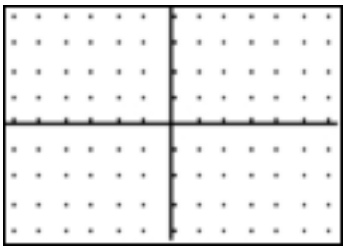


Domain: _____ Range: _____

$f(x)>0$: _____ $f(x)<0$: _____

Inc: _____ Dec: _____

5. Square Root function: $f(x) = \sqrt{x}$

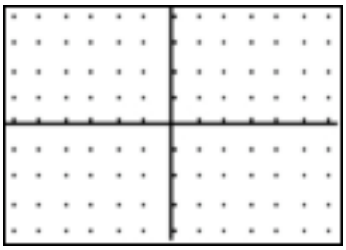


Domain: _____ Range: _____

f(x)>0: _____ f(x)<0: _____

Inc: _____ Dec: _____

6. Cubic function: $f(x) = x^3$

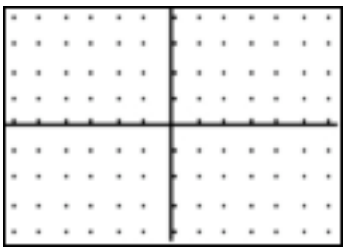


Domain: _____ Range: _____

f(x)>0: _____ f(x)<0: _____

Inc: _____ Dec: _____

7. Reciprocal function: f(x) = 1/x

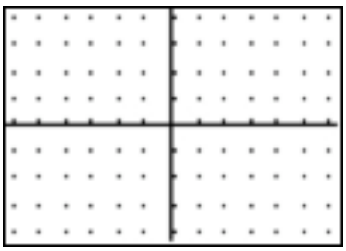


Domain: _____ Range: _____

f(x)>0: _____ f(x)<0: _____

Inc: _____ Dec: _____

8. Semicircle function: $f(x) = \sqrt{r^2 - x^2}$, $r > 0$



Domain: _____ Range: _____

f(x)>0: _____ f(x)<0: _____

Inc: _____ Dec: _____