This worksheet will help us practice the basic idea of a function and function notation. We will also explore domain.

1. Neither relationship shown below is a function. For each, give an $x$ value that has more than one $y$ value. Also, tell what those $y$ values are (approximately, if need be) and show the points on the graph (for part $a$ ).
a.)
b.) $y^{2}=x+3$
2. For each function, find the desired value(s). Estimates will be accepted for part $a$. Pay attention to the scale given for the graph. Please simplify part $b$.
a.) Find $f(3)$ and $f(6)$.
b.) $f(x)=2 x^{2}-6 x$
Find $f(x-3)$.

3. We will work on understanding domain and range. Remember domain can be thought of as the $x$ values that you can put into the function and that will yield acceptable $y$ values. Range can be thought of as the $\boldsymbol{y}$ values you can possibly get out.
a.) Consider the function $y=\sqrt{3 x+4}$. Recall you cannot take the square root of a negative number (in the real number system). All $x$ values that would result in the square root of a negative number would be excluded from the domain. Give one such $x$ value that would be excluded from the domain.
b.) Graph this function on your grapher. Use the window $[-2,4] \times[-1,5]$ to match the graph paper given below; this will make it easier to copy to paper. (Note: Make sure your graph looks like a curve and not a straight line. Although the calculator may not show it, the graph should hit the $x$-axis at $-4 / 3$. Please make that obvious on your graph.)

c.) Looking at the graph, what values of $x$ are associated with the graph? In other words, what values of $x$ will work in the function $y=\sqrt{3 x+4}$ ? This is the domain. Use interval notation.
d.) Looking at the graph, what values of $y$ are associated with the graph? In other words, what values could we get out for $y$ ? This is the range. Use interval notation.
