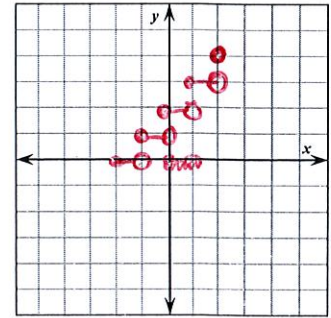
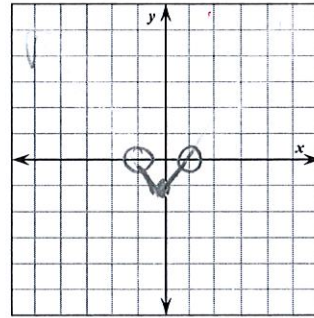
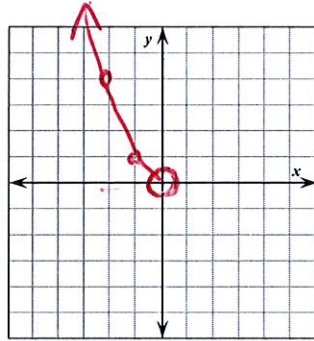
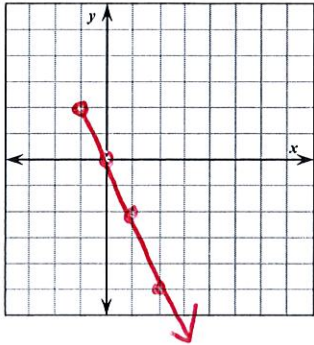


Piecewise Functions: Day 6 Notes

1. Piecewise Functions- A functions that is defined by two (or more) equations over a specified domain.

2. Graph each of the following, given the domain restrictions. List the domain and range in interval notation.

- a. $y = -2x, x \geq -1$ b. $y = x^2, x < 0$ c. $y = |x| - 1, -1 < x < 1$ d. $y = [x+2], -2 \leq x \leq 2$



3. Evaluate each piecewise function at the given values of the independent variable.

a. $g(x) = \begin{cases} 3x+5 & \text{if } x < 0 \\ 4x+7 & \text{if } x \geq 0 \end{cases}$ $g(-2) = -1$ $g(0) = 7$ $g(3) = 19$

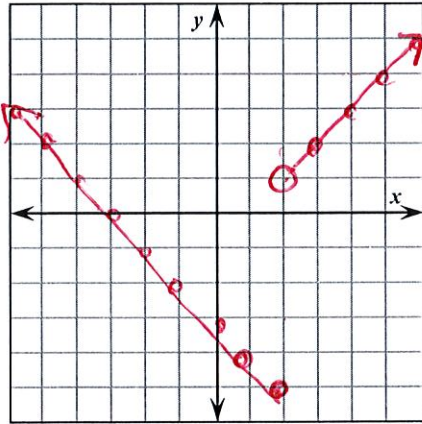
There will be only one answer to each as these are functions. Plug into the equation that the x in g(x) meets the restriction for.

b. $f(x) = \begin{cases} x^2+1 & \text{if } x \geq -3 \\ -(x+3) & \text{if } x < -3 \end{cases}$ $f(0) = 1$ $f(-6) = 3$ $f(-3) = 10$

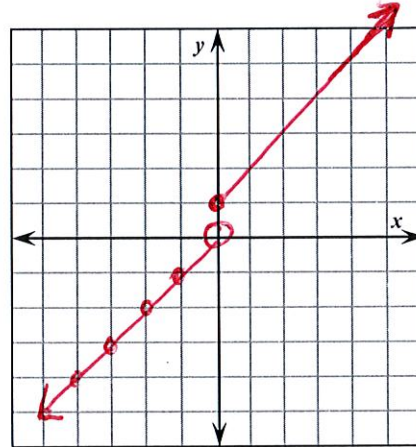
c. $h(x) = \begin{cases} \frac{x^2-9}{x-3} & \text{if } x \neq 3 \\ 6 & \text{if } x = 3 \end{cases}$ $h(5) = 8$ $h(0) = 3$ $h(3) = 6$

4. Sketch the graph of each function. Then list the domain and range in interval notation.

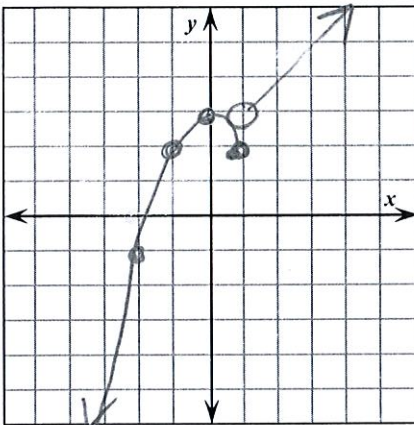
a. $h(x) = \begin{cases} x-1 & \text{if } x > 2 \\ -x-3 & \text{if } x \leq 2 \end{cases}$



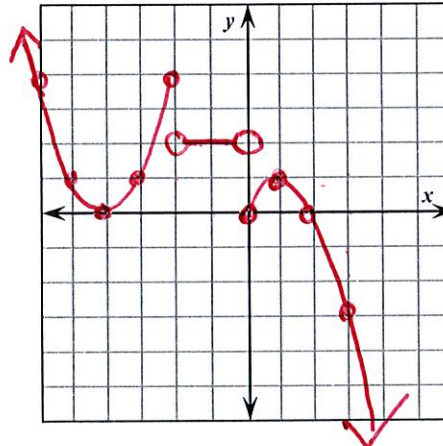
b. $g(x) = \begin{cases} -x & \text{if } x < 0 \\ x+1 & \text{if } x \geq 0 \end{cases}$



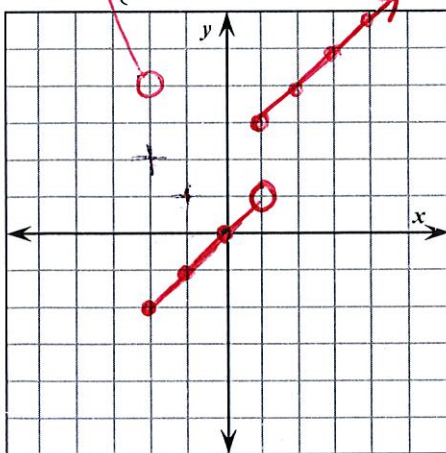
c. $h(x) = \begin{cases} |x+2| & \text{if } x > 1 \\ -x^2+3 & \text{if } x \leq 1 \end{cases}$



d. $g(x) = \begin{cases} (x+4)^2 & \text{if } x \leq -2 \\ 2 & \text{if } -2 < x < 0 \\ -x^2+2x & \text{if } x \geq 0 \end{cases}$



e. $f(x) = \begin{cases} x^2 & \text{if } x < -2 \\ x & \text{if } -2 \leq x < 1 \\ x+2 & \text{if } x \geq 1 \end{cases}$



When graphing Piecewise .

① It helps to remember general shape of graph and transformations .

② Plug in value next to each inequality for x. Remember < or > means open circle,

③ Plug in x-values.