Piecewise-Defined Functions

Review graphing lines, quadratics, square roots, and absolute values.

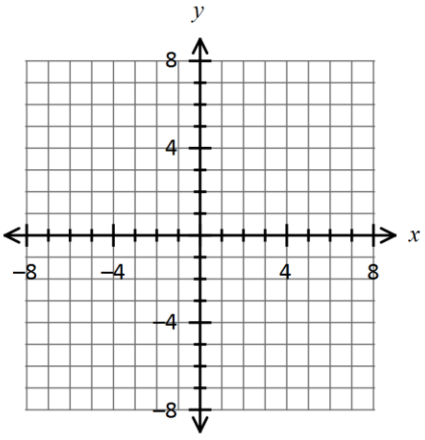
Graphing Piecewise-Defined Functions

Sometimes a function is defined differently on different parts of its domain. When functions are defined by more than one equation, they are called ***piecewise-defined functions*.**

Examples: For the following functions:

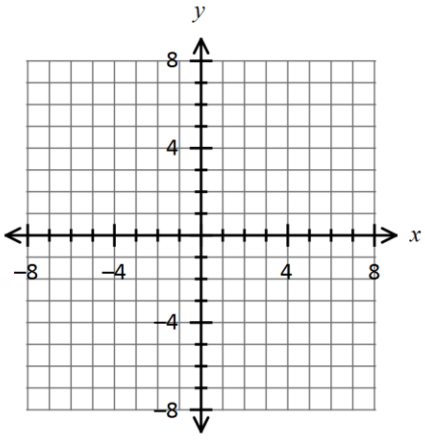
a) Graph the function.
b) Find the domain and range of the function.
c) Locate any intercepts.
d) Find the requested function values

1) $f(x)=\begin{cases} x+3 & \text{if } x\le -1 \\ 2x & \text{if } x>1 \end{cases}$



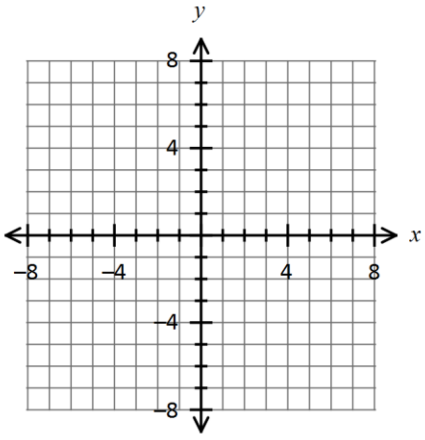
Find $f(-3)$ and $f(2)$

2) $f(x)=\begin{cases} -5 & \text{if } -4\le x<0 \\ x^2+1 & \text{if } x\ge 0 \end{cases}$



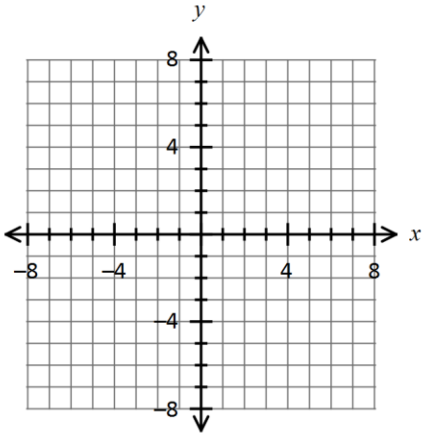
Find $f(-2)$, $f(0)$, and $f(3)$

3) $f(x)=\begin{cases} 3-x & \text{if } -5\le x<-2 \\ \sqrt{x} & \text{if } 0<x<4 \\ 2x-6 & \text{if } x\ge 4 \end{cases}$



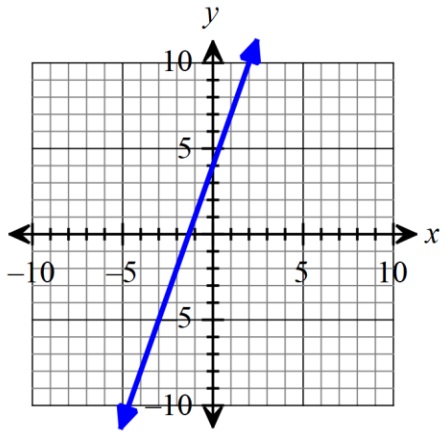
Find $f(-4)$, $f(2)$, and $f(4)$

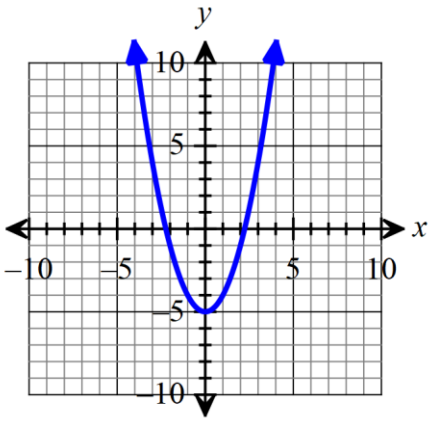
4) $f(x)=\begin{cases} |x| & \text{if } x<2 \\ 5 & \text{if } x=2 \\ -\frac{1}{2}x & \text{if } x>2 \end{cases}$



Find $f(0)$, $f(2)$, and $f(8)$

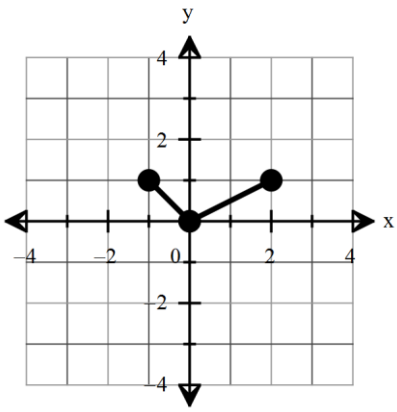
Find the equation of the following graphs.



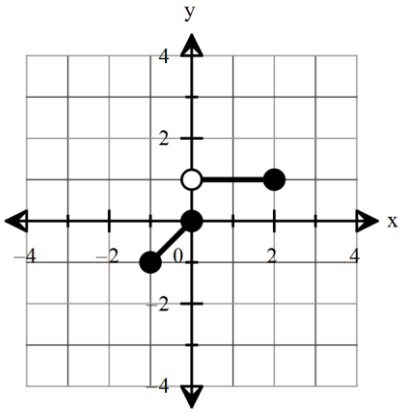


The graph of a piecewise function is given. Write a definition for each function.

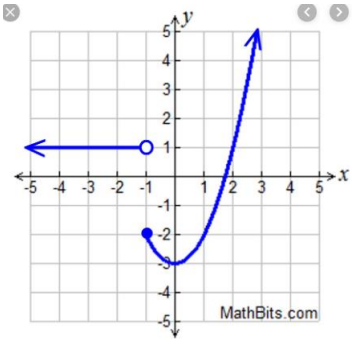
a.



b.



c.



Talk about continuous functions.

Do problem #13 on homework