Integrated Math 3 Name: _____
Unit 3: Representing Functions
3.8 Date: _____ Period: _____

Objective: Graphing piecewise functions

Warm-up: Graph the following linear inequalities on a number line

a) $x \geq 4$ b) $x > 1$ c) $x < 0$ d) $x \leq -2$

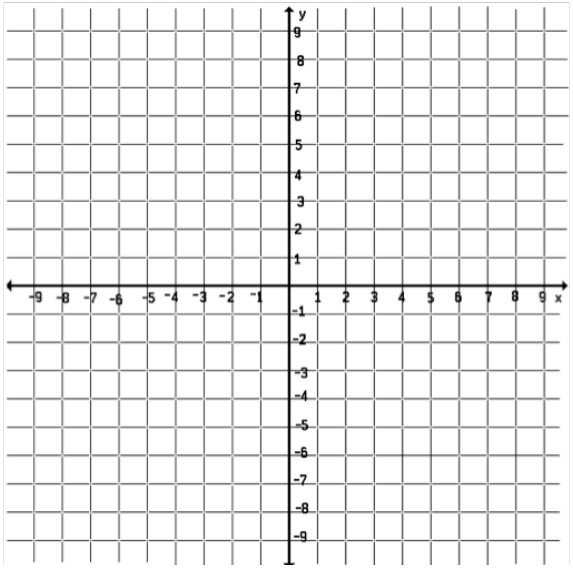
How to graph piecewise functions:

Tips:

- Create a t-chart for each equation included in the function
- Make sure each value of the restricted domain is included in the t-chart
- Decide whether to use an "open" or "closed" circle based on the restricted domain

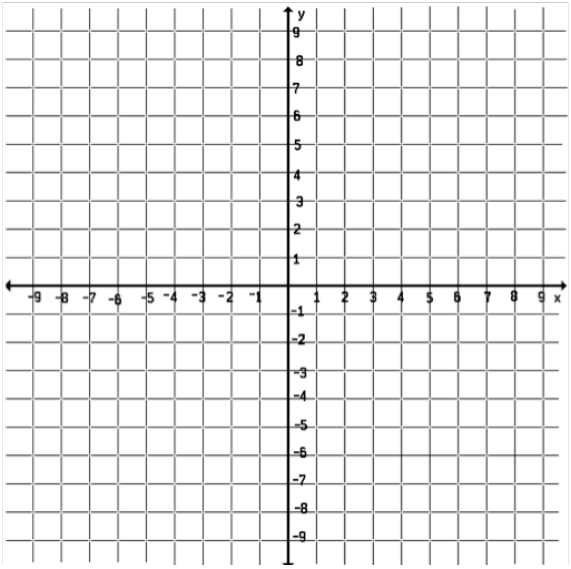
Example:

$$f(x) = \begin{cases} x + 2 \; if \; x < 0 \\ x \; if \; x \geq 0 \end{cases}$$

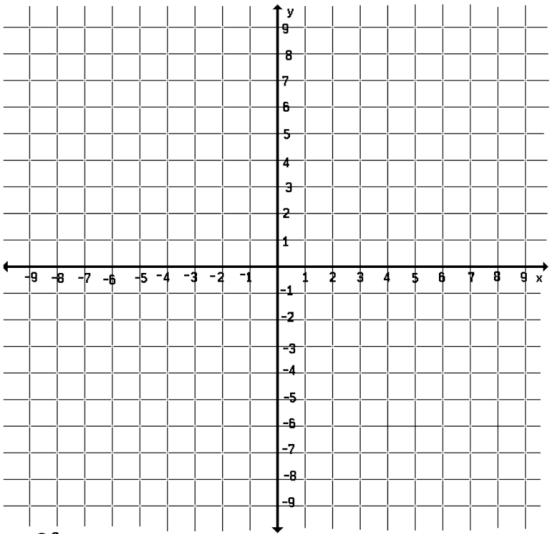


Practice: Graph the following piecewise functions.

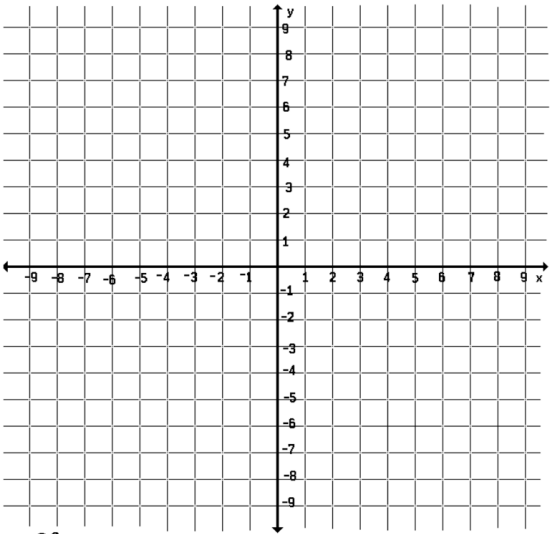
a. $f(x) = \begin{cases} \frac{2}{3}x + \frac{2}{3} \ if \ x > 2 \\ -x + 1 \ if \ x \leq 2 \end{cases}$



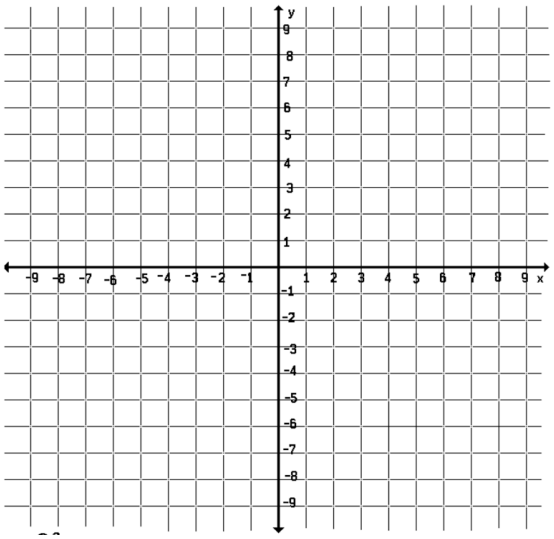
b. $f(x) = \begin{cases} -x \ if \ x > 2 \\ x - 4 \ if \ x \leq 2 \end{cases}$



c. $f(x) = \begin{cases} x + 4 \ if \ x < -2 \\ 4 \ if \ x = -2 \\ x + 6 \ if \ x > -2 \end{cases}$



d. $f(x) = \begin{cases} 4 \; if \; 0 \leq x < 2 \\ 5 \; if \; 2 \leq x < 4 \\ 6 \; if \; 4 \leq x < 6 \end{cases}$



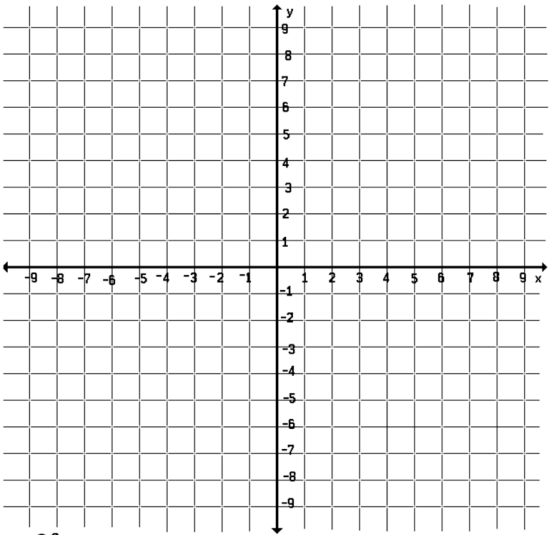
Putting it all together!

Given the function $f(x) = \begin{cases} x - 6 \; if \; x < 5 \\ \frac{1}{2}x - 2 \; if \; x \geq 5 \end{cases}$

a) Evaluate $f(2)$

b) Evaluate $f(5)$

c) Evaluate $f(8)$



d) Graph the function!