WELCOME

Chapter 16: Section 1:

Identifying & Graphing Piecewise & Absolute Value Functions

Warm Up

1) Are the rationals closed under, (add, subt, mult, div.) if not give a counter example.

2) Write each of the following as a fraction.

a) .245245245... b) .43434343…

3) Simplify each of the following

a) $\sqrt{-99}$ b) $x^{-4}x^{12}$ c) $\left(x^3\right)^8$

Chap. 16 Sect 1: Learning Target

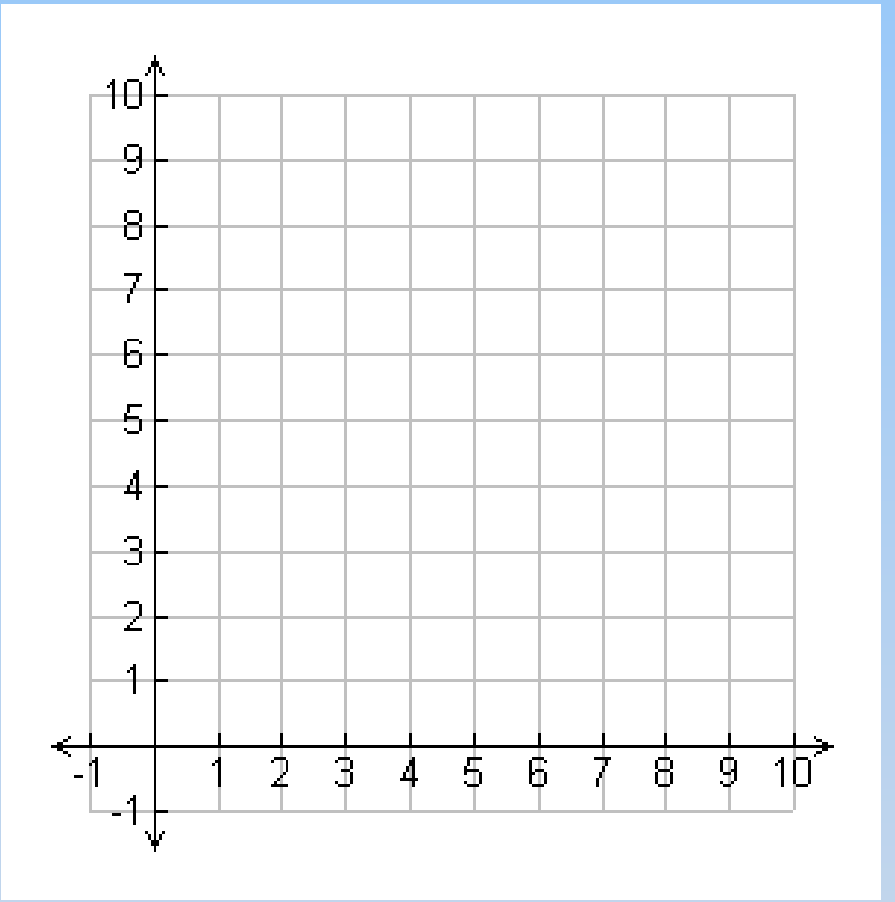
- I can identify and graph Piecewise Functions

- I can identify and graph Abs Value functions

Piecewise Function

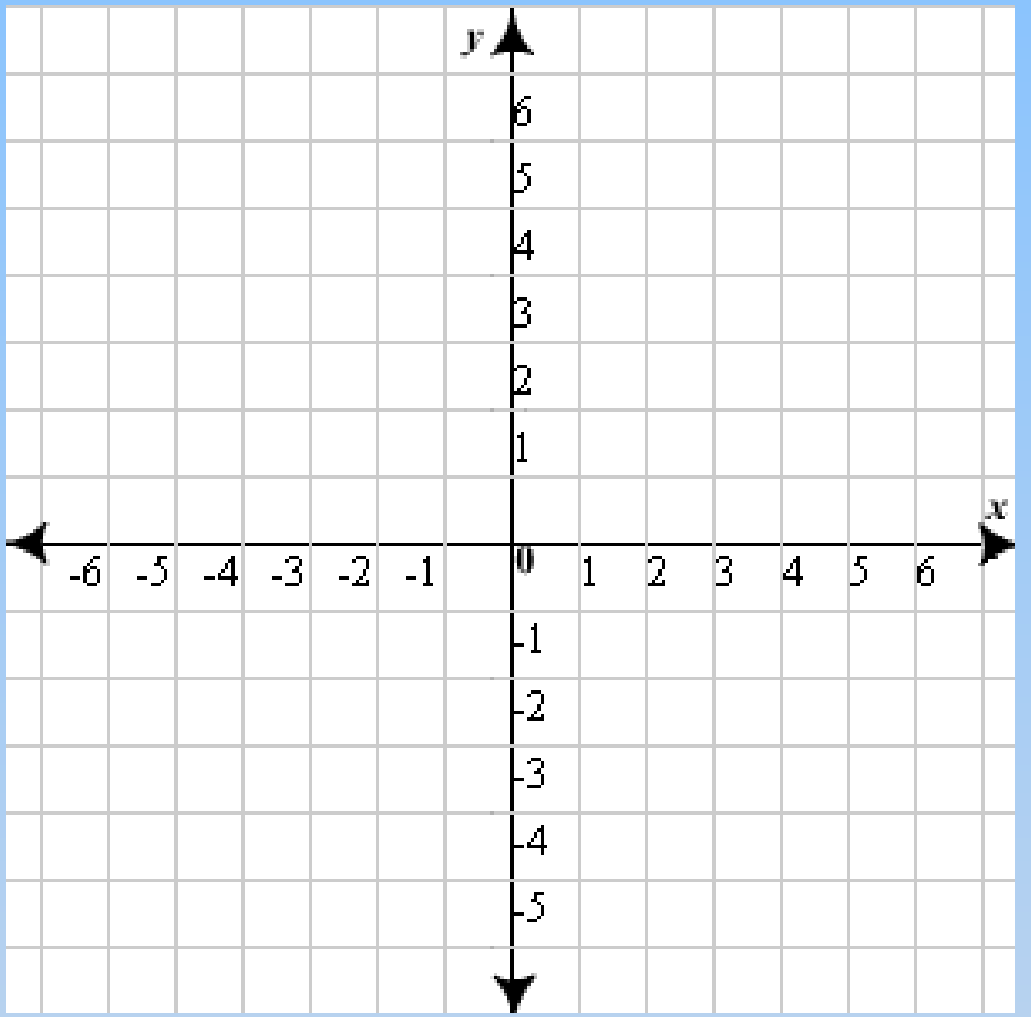
A function that uses multiple equations on non-overlapping intervals to express change between an input and output.

$$f(x) = \begin{cases} 2x + 1 & 0 \leq x < 3 \\ 7 & 3 \leq x \leq 6 \\ -\frac{1}{2}x + 10 & 6 < x \leq 10 \end{cases}$$



Try It…

$$f(x) = \begin{cases} -2x - 3 & x < -1 \\ x - 5 & x \geq -1 \end{cases}$$



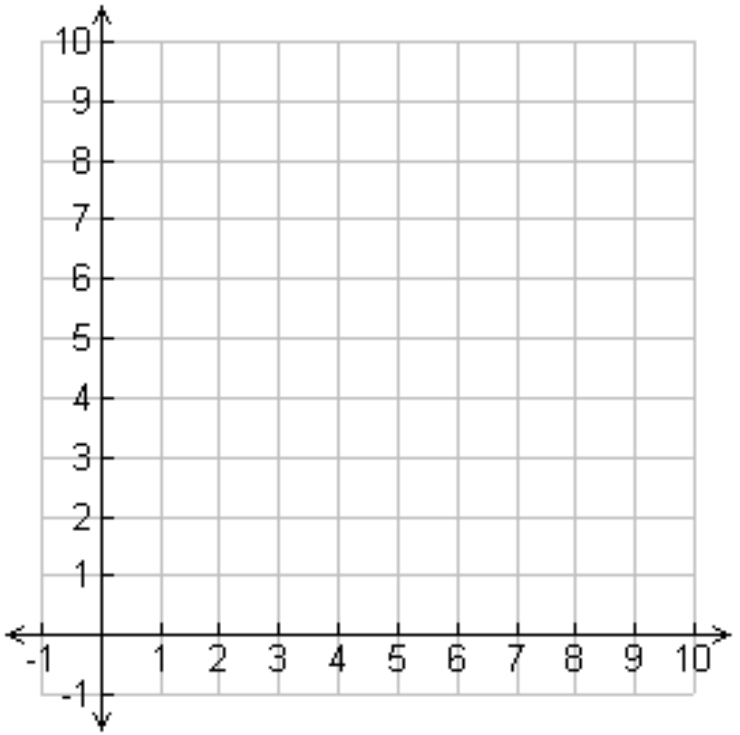
Use either the endpoints method or the erasing method.

Evaluating Piecewise Functions

We can evaluate a piecewise function by plugging the inputs into the appropriate equation for where they exists.

$$f(x) = \begin{cases} 2x + 2 & 0 \leq x < 3 \\ 1 & 3 \leq x \leq 4 \\ -x + 10 & 4 < x \leq 10 \end{cases}$$

$f(7) =$ $f(1) =$ $f(4) =$

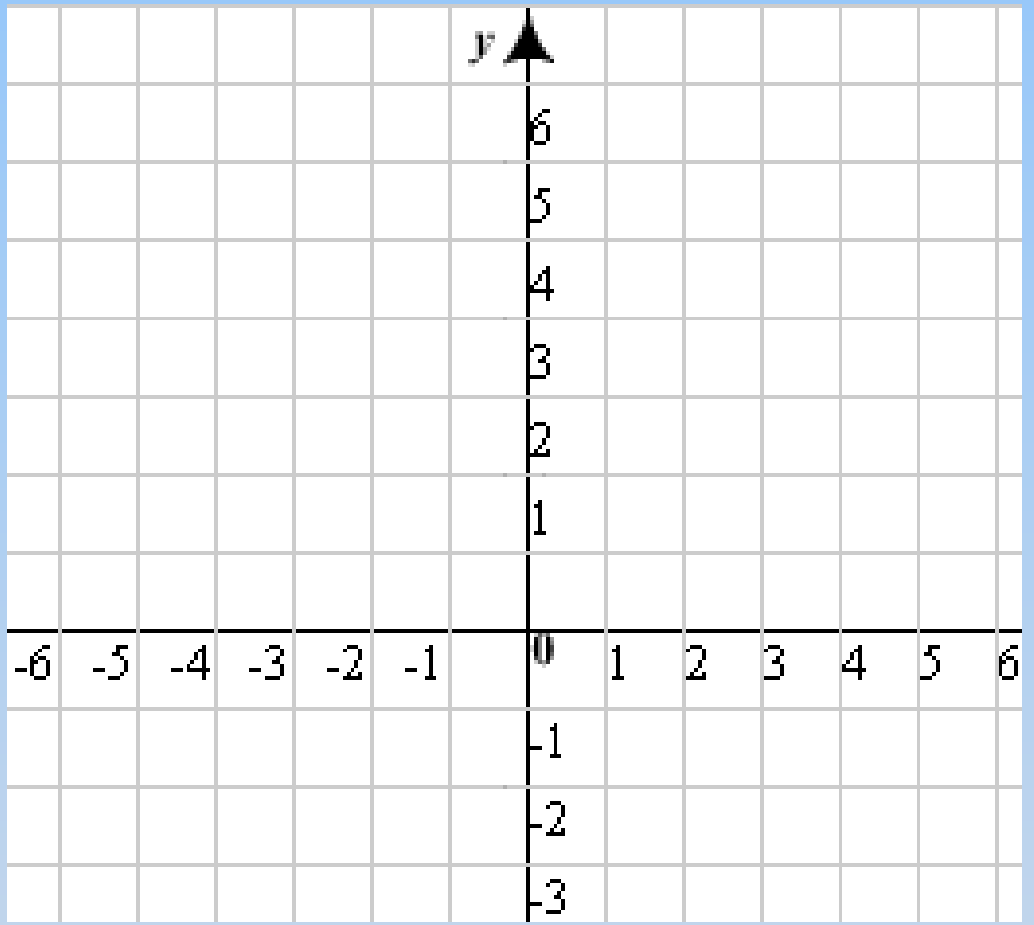


Absolute Value Function

A V-Shaped piecewise function that is made from two lines that have opposite(+/-) slopes.

$$f(x) = \left|\frac{1}{2}x\right| - 1$$

$$f(x) = \begin{cases} -\frac{1}{2}x - 1 & x \leq 0 \\ \frac{1}{2}x - 1 & x \geq 0 \end{cases}$$



Try It…

$$f(x) = |2x| - 5$$