Piece-Wise Functions
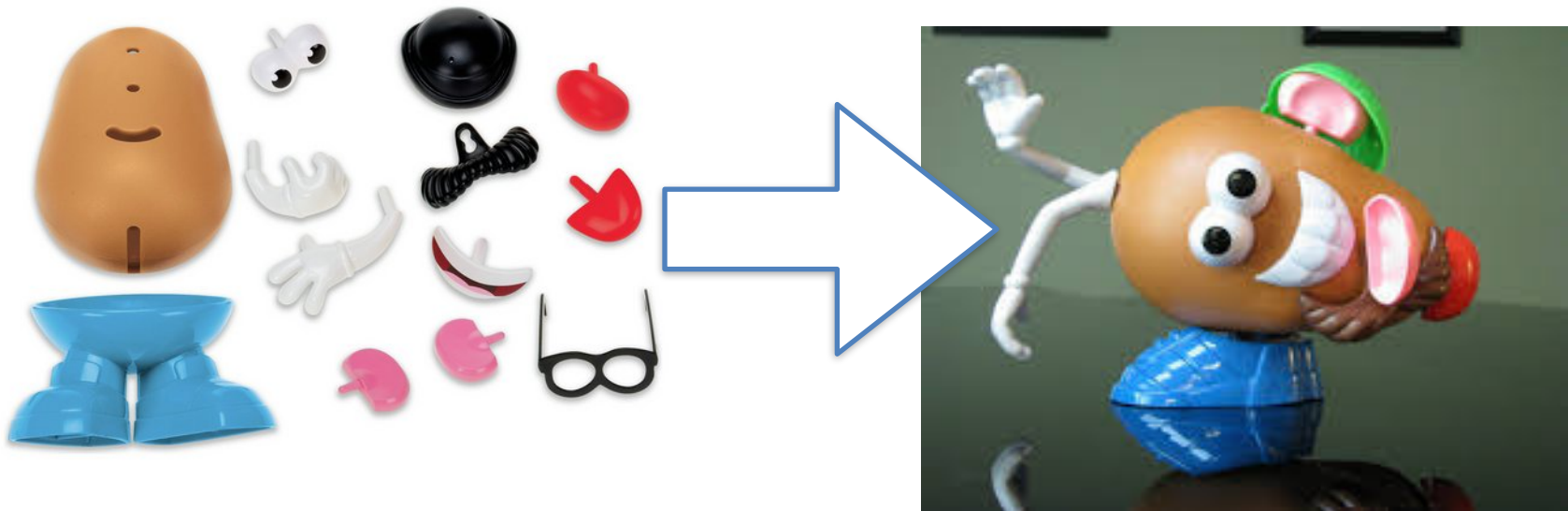
YOUneedApencilFORthisLESSONge
tONEb4ITis2LATE

By the end of this lesson, I will be able to answer the following questions…

1. What is a piece-wise function?

2. How do I read the layout to piece-wise functions?

3. How can a real-world scenario be modeled through a piece-piece-wide function?

Vocabulary

Piece-Wise Function: A function that is defined by two or more equations over a specific domain.
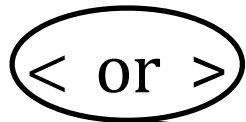
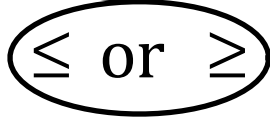$$f(x) = \begin{cases} -2x+1; & x < 2 \\ x+3; & x \geq 2 \end{cases}$$
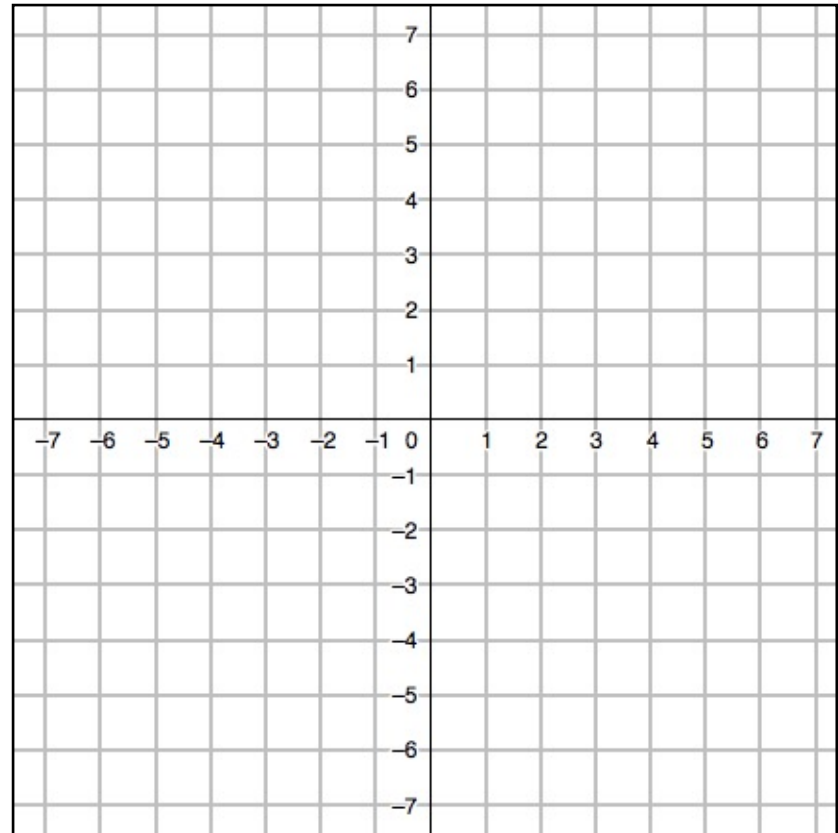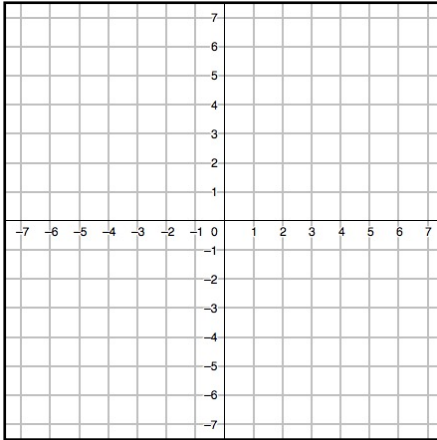
functions   parameters
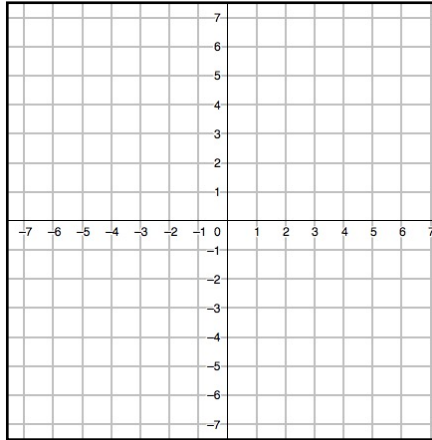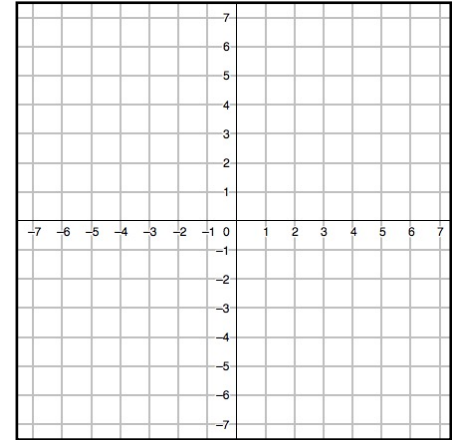
$<$ or $>$ → open dot

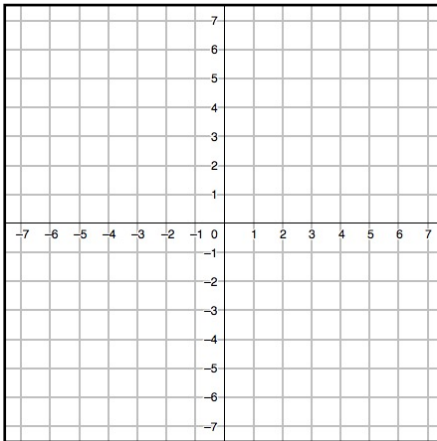$\leq$ or $\geq$ → closed dot
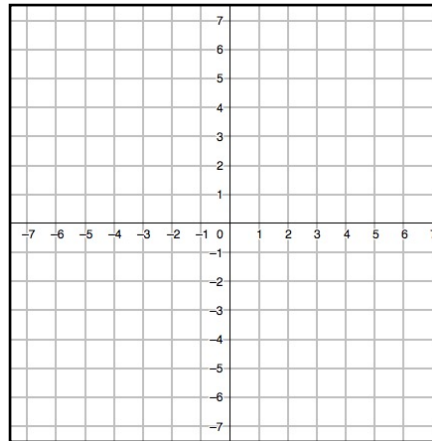
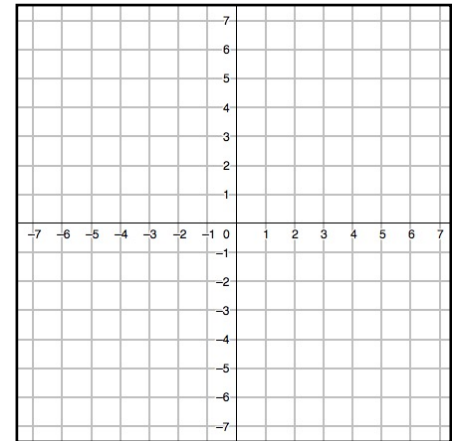# Prerequisite Skills with Practice

$$f(x) = c$$

$$f(x) = x$$

$$f(x) = x^2$$

$$f(x) = x^3$$

$$f(x) = |x|$$

$$f(x) = \sqrt{x}$$

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

Sketch: draw the graph in pencil.

Cut: erase the part of the graph that is not defined by the parameters.

Cap: place an open or closed dot and the end(s) of the graph

Evaluating at a point

$f(-3) =$

$f(-1) =$

$f(1) =$

Is this graph continuous?

$$f(x) = \begin{cases} |x| + 3; & x < 4 \\ -\sqrt{x}; & x \geq 4 \end{cases}$$

Sketch: draw the graph in pencil.

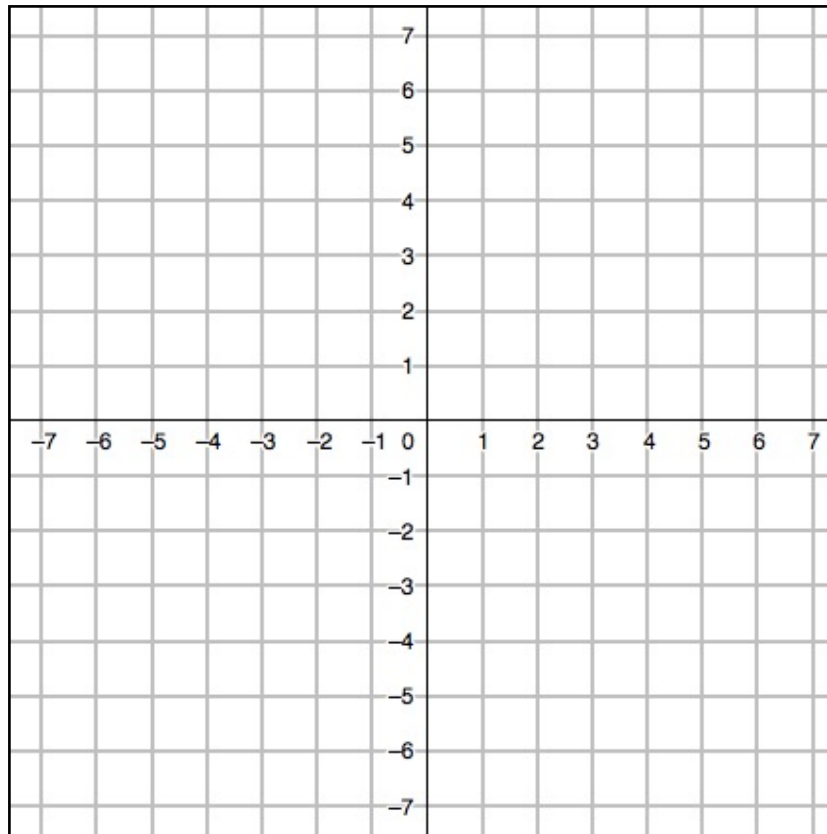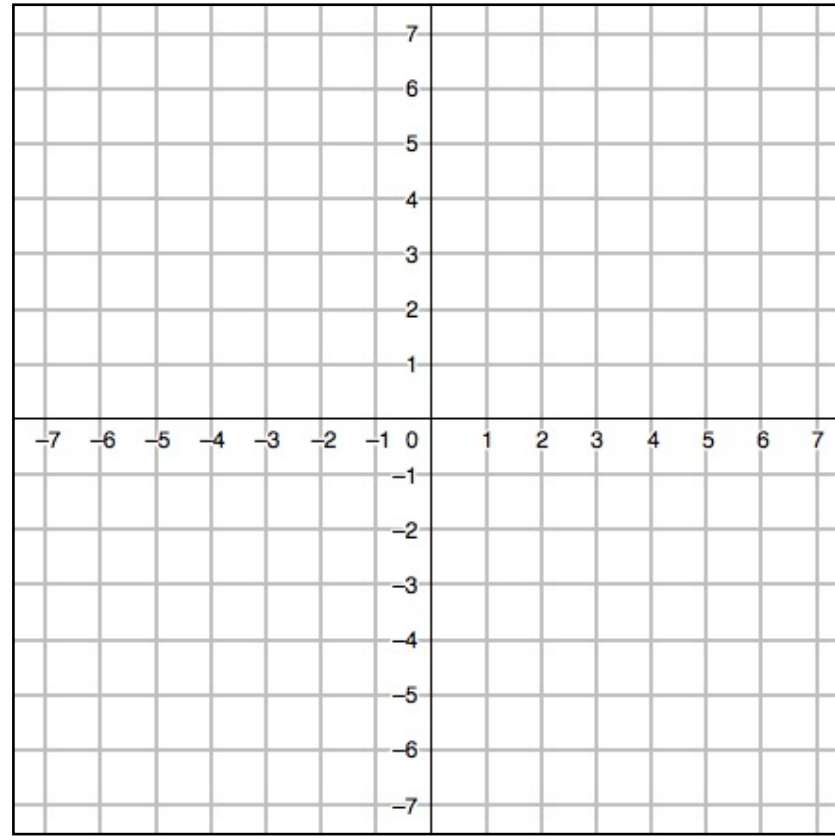**Cut:** erase the part of the graph that is not defined by the parameters.

Cap: place an open or closed dot and the end(s) of the graph

Evaluating at a point

$f(-3) =$

$f(4) =$

$f(100) =$

Is this graph continuous?

$$f(x) = \begin{cases} -(x+2)^2 + 4; & x < 0 \\ (x-2)^2 - 4; & x \geq 0 \end{cases}$$
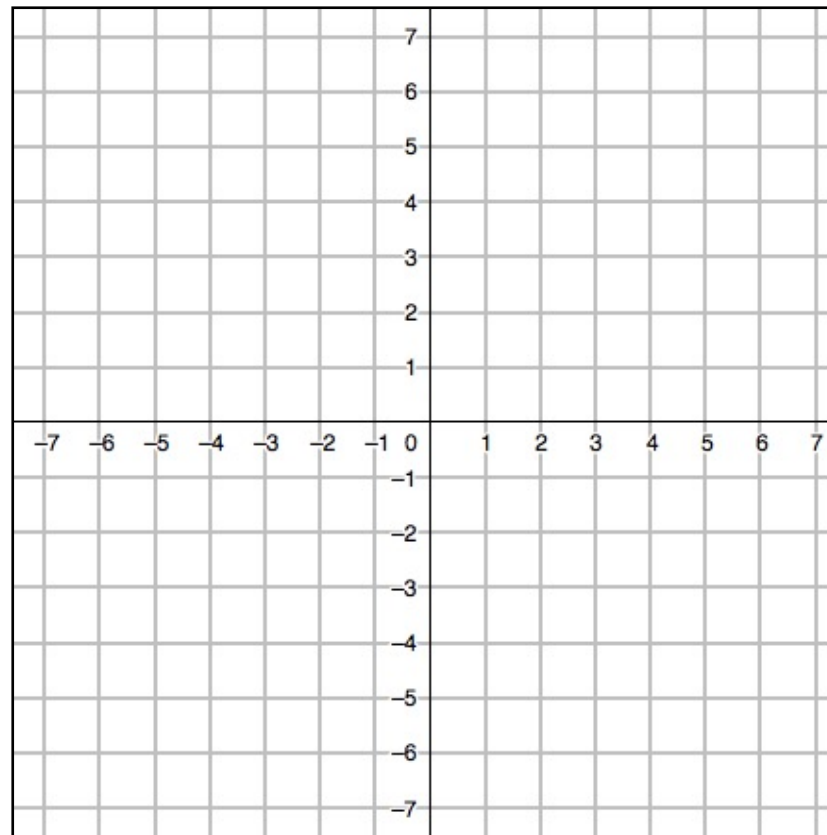
Sketch: draw the graph in pencil.

Cut: erase the part of the graph that is not defined by the parameters.

Cap: place an open or closed dot and the end(s) of the graph

shifting the graph

$$f(x+4)$$

$$-f(x-3)-1$$

Is this graph continuous?

$$f(x)=\begin{cases} 2x-3; & x<1 \\ -1; & 1\le x\le 4 \\ -x+3; & x>4 \end{cases}$$

Sketch: draw the graph in pencil.

Cut: erase the part of the graph that is not defined by the parameters.

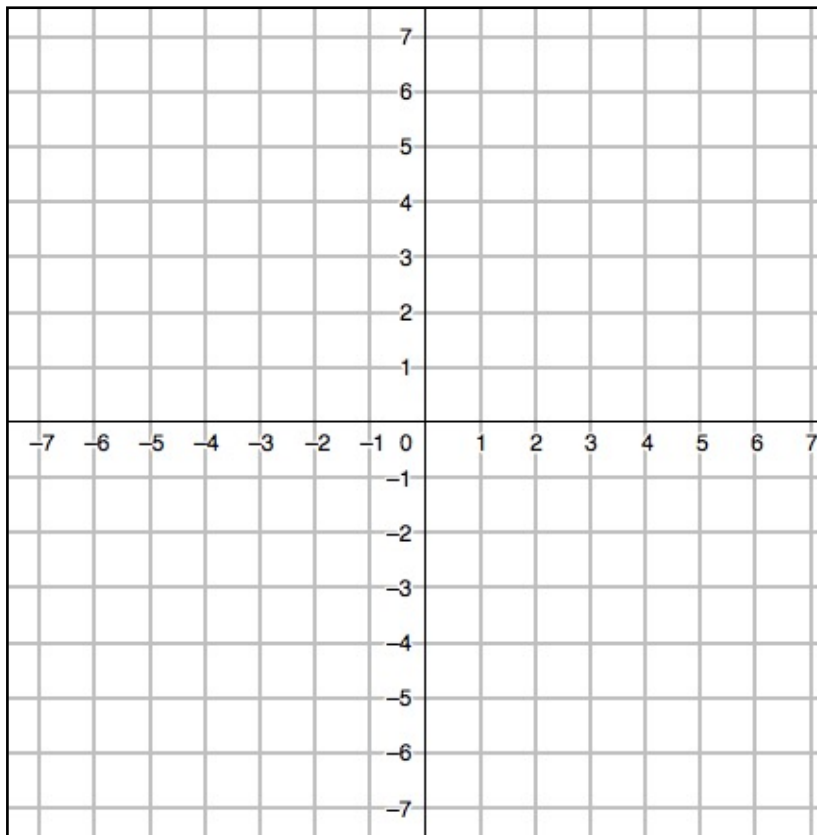**Cap:** place an open or closed dot and the end(s) of the graph

Evaluating at a point

$f(-100)=$

$f(2)=$

$f(3)=$

Is this graph continuous?

THE END

Visit PlottsMath for assignment details