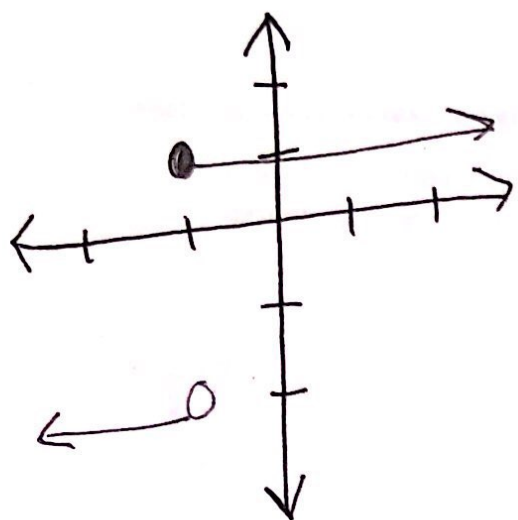


Evaluating Piecewise Functions

° piecewise function: function that is defined piece by piece.



$o, >, <$ (open circle)

\bullet, \geq, \leq (closed circle)

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

° Ex 1) $f(x) = \begin{cases} x-6, & x \leq -3 \\ 2x+2, & x > -3 \end{cases}$

when x is less than or equal to -3 , use this equation
when x is greater than -3 , use this equation

a) $f(7)$
 $2(7)+2$
 $\boxed{16}$

b) $f(-3)$
 $-3-6$
 $\boxed{-9}$

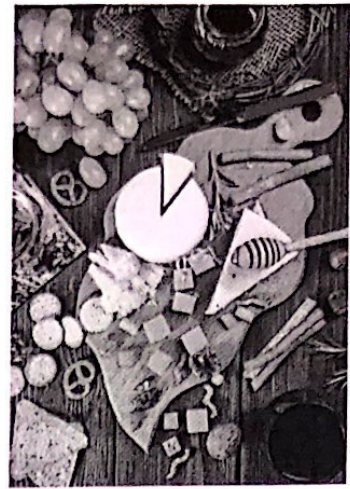
c) $f(-4)$
 $-4-6$
 $\boxed{-10}$

° Ex 2) $g(x) = \begin{cases} x^2, & x < 0 \\ 3x-1, & x \geq 0 \end{cases}$

a) $\frac{g(0)}{3(0)-1}$
 $\boxed{-1}$

b) $\frac{g(2)}{3(2)-1}$
 $\boxed{5}$

c) $\frac{g(-3)}{(-3)^2}$
 $\boxed{9}$

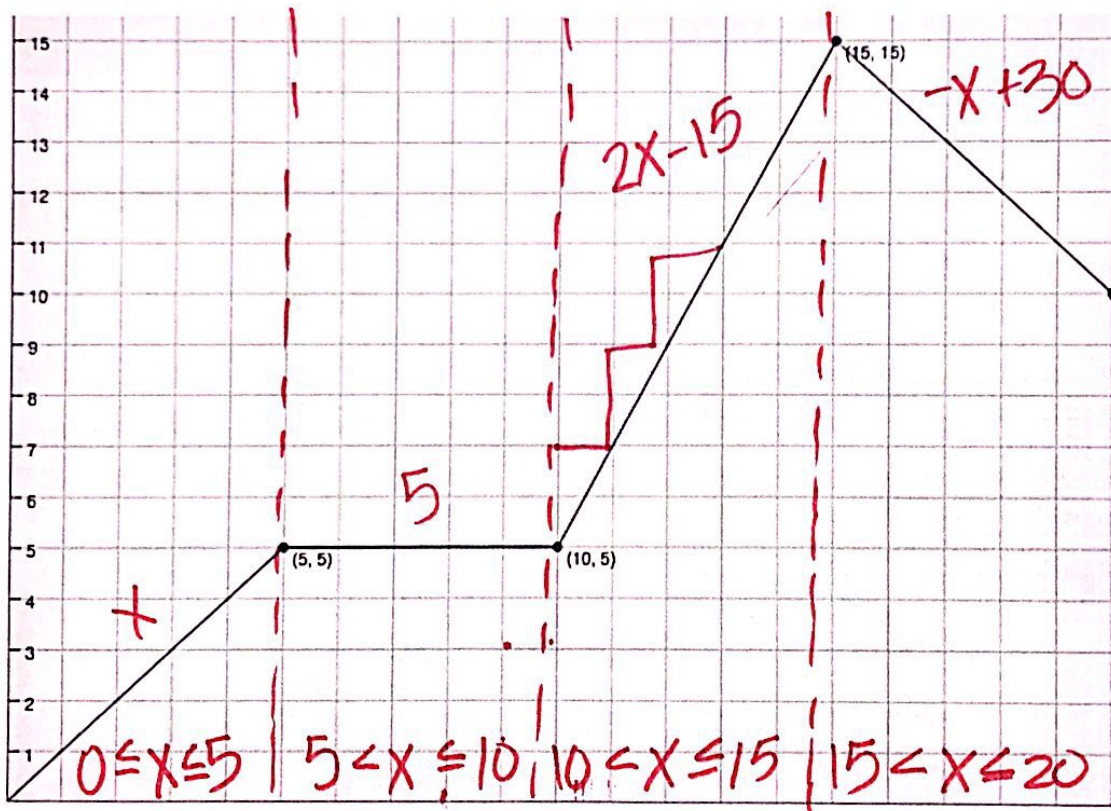


4.1 Some of This, Some of That

A Develop Understanding Task

Part I: Connect context and graphical representations

1. Create a story that matches the graph below. Label axes and be as specific as possible in describing what is happening to connect your story to the graph.



2. If you were to write a function to match each part of your story (or section of the graph), how many would you write? Explain.

$$f(x) = \begin{cases} x, & 0 \leq x \leq 5 \\ 5, & 5 < x \leq 10 \\ \dots & \dots \end{cases}$$

GUIDED NOTES: Piecewise Functions

Evaluating Piecewise Functions

Given: $f(x) = \begin{cases} |x-4|-7, & x \leq -1 \\ 2x-3, & -1 < x < 1 \\ -x^2-2, & x \geq 1 \end{cases}$

EX1. $f(-3)$

$$\begin{aligned} &|-3-4|-7 \\ &|-7|-7 \\ &7-7 \\ &\boxed{0} \end{aligned}$$

EX2. $f(0)$

$$2(0)-3 = \boxed{-3}$$

EX3. $f(1)$

$$\begin{aligned} &-(1)^2-2 \\ &-1-2 \\ &\boxed{-3} \end{aligned}$$

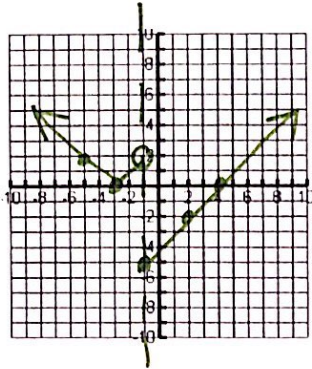
EX4. $f(5) + 6f(-4)$

$$\begin{aligned} &-5^2-2 + 6(|-4-4|-7) \\ &-25-2 + 6(8-7) \\ &\boxed{-21} \end{aligned}$$

Graphing Piecewise Functions

EX5. $f(x) = \begin{cases} |x+3|, & x < -1 \\ x-4, & x \geq -1 \end{cases}$

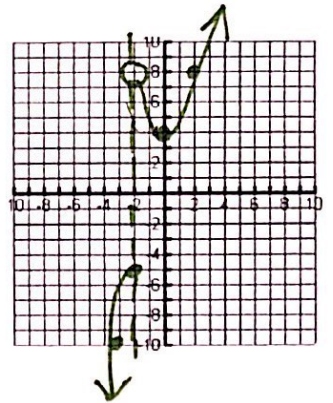
\rightarrow open
 \hookrightarrow closed



EX6.

$$g(x) = \begin{cases} -x^2-1, & x \leq -2 \\ x^2+4, & x > -2 \end{cases}$$

\rightarrow closed
 \hookrightarrow open



EX7.

$$f(x) = \begin{cases} -x, & x < -1 \\ 5, & -1 \leq x \leq 1 \\ x, & x > 1 \end{cases}$$

\rightarrow open
 \rightarrow closed
 \rightarrow open

