

Extension Use Piecewise Functions

EXAMPLE 1 Evaluate a piecewise function

$$g(x) = \begin{cases} \overset{\text{rule}}{2x - 1}, & \overset{\text{Dom}}{\text{if } x \leq 1} \\ 3x + 1, & \text{if } x > 1 \end{cases}$$

Evaluate the function $g(x)$ above when (a) $x = 1$ and (b) $x = 5$.

$$g(1) = 2(1) - 1 = \boxed{1}$$

$$g(5) = 3(5) + 1 = \boxed{16}$$

$$g(-3) = 2(-3) - 1 = \boxed{-7}$$

EXAMPLE 1 Evaluate a piecewise functionEvaluate the function when $x = -2$ and $x = 5$

$$g(x) = \begin{cases} 4x - 3, & \text{if } x > 3 \\ 5x + 2, & \text{if } x \leq 3 \end{cases}$$

$$g(-2) = 5(-2) + 2 = \boxed{-8}$$

$$g(5) = 4(5) - 3 = \boxed{17}$$

EXAMPLE 2 Graph a piecewise function

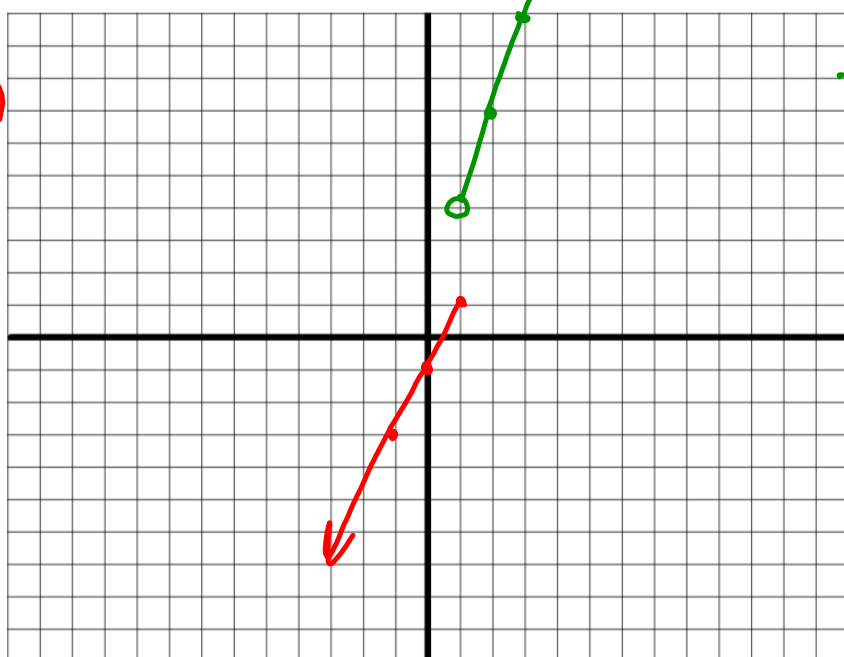
Graph the function $g(x) = \begin{cases} 2x - 1, & \text{if } x \leq 1 \\ 3x + 1, & \text{if } x > 1 \end{cases}$

$$2(1) - 1 = 1$$
$$(1, 1)$$
$$(0, -1)$$

 $1, 0, -1, \dots$

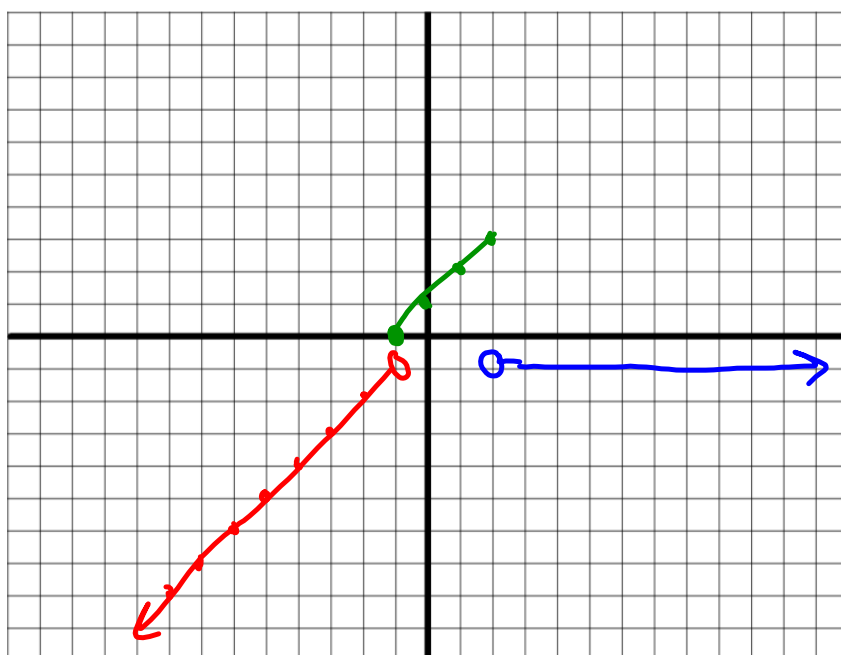
$$3(1) + 1 = 4$$
$$(1, 4)$$

$$3(2) + 1 = 7$$
$$(2, 7)$$

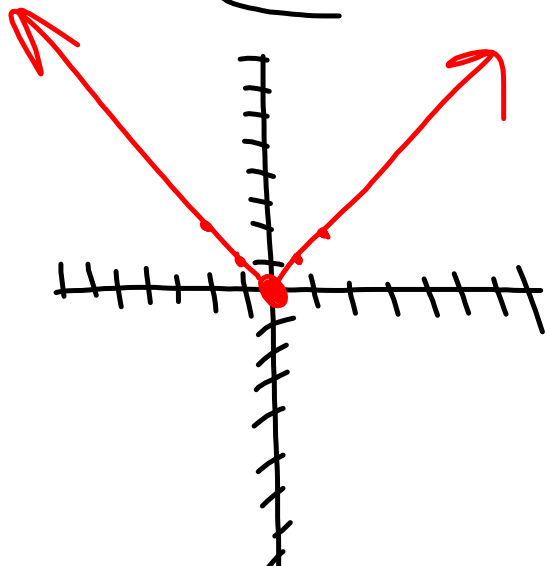


EXAMPLE 2 Graph a piecewise function

Graph the function $f(x) = \begin{cases} x + 0 & \text{if } x < -1 \\ x + 1, & \text{if } -1 \leq x \leq 2 \\ -1, & \text{if } x > 2 \end{cases}$



$$f(x) = \begin{cases} -x & \text{if } x < 0 \\ x & \text{if } x \geq 0 \end{cases} = |x|$$



Chapter 2 Topics

- Relations & Functions
 - Domain
 - Range
 - Function Notation → $f(x)$
- Slope & Rate of Change
 - $m = \frac{y_2 - y_1}{x_2 - x_1}$
- Graphs of Lines
 - $y = mx + b$ → slope-int
 - $y - y_1 = m(x - x_1)$ → point-slope
 - $Ax + By = C$ → Standard form
- Making Equations
 - Given a slope and a y-intercept
 - Given a slope and a point
 - Given two points
- Direct Variation
 - $y = ax$
 - Word problems...
- Scatter Plots → correlation & correlation coeff. (r-value)
 - Estimate Lines of Best Fit
 - Predicting y when given x
- Transformations & Absolute Value
 - Abs Graphs
 - $y = a|x - h| + k$
- Inequality Graphs
 - Graphing
 - Dashed vs. Solid Lines
 - Shading