

## Piecewise Functions (1.6)

### Math Learning Target:

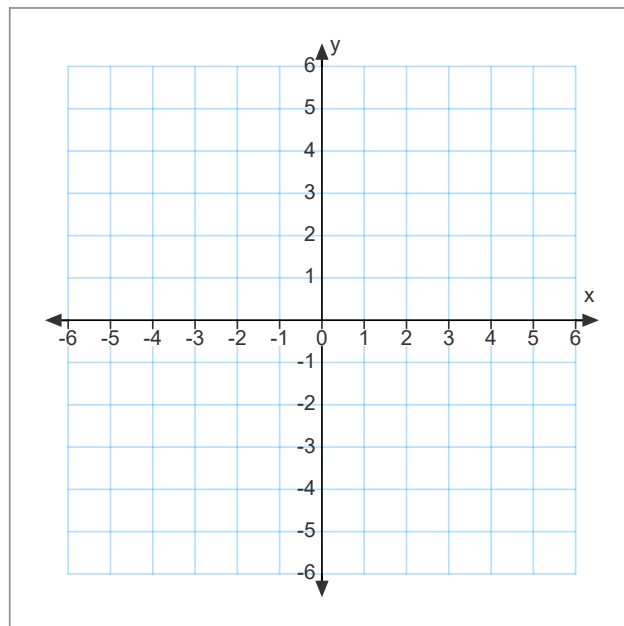


"I can graph all piecewise functions. I know how to determine if a function is continuous. If a function is discontinuous, I can describe the discontinuity. I can apply what I have learned in familiar and unfamiliar settings."

**piecewise function** A **piecewise function** is a function defined by as two or more functions, on two or more intervals.

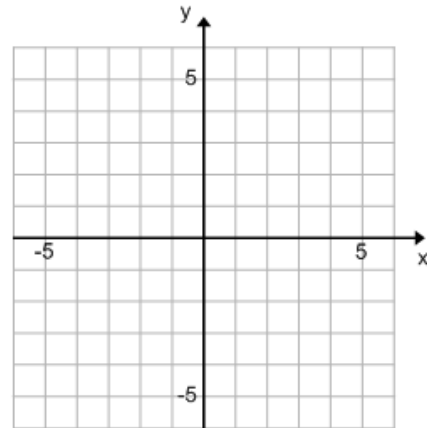
**Recall:**  $y = |x|$  represents the distance  $y$  that the coordinate  $x$  is from the origin.

The absolute value function may be expressed as a piecewise function:



**EXAMPLE 1.** Graph:

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



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**continuity**  
(loosely stated)

A function is **continuous** when there are no "holes", vertical asymptotes and "jumps" over its entire domain. If the function is not continuous, it is **discontinuous**.

**EXAMPLE 2.** Is the function in EXAMPLE 1 continuous? Explain.

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