TOPIC: PIECEWISE FUNCTIONS

Intro to Piecewise Functions

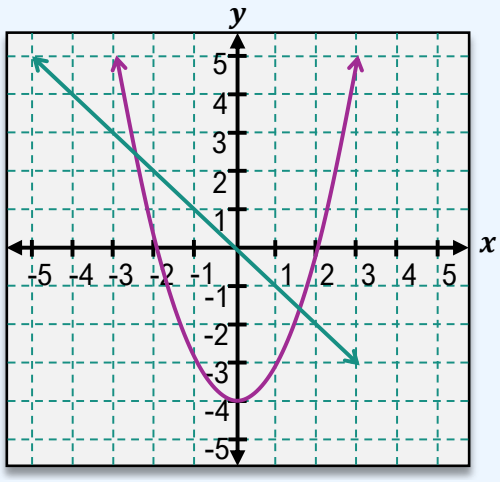
◆ **Piecewise Function:** A *single* function made up of _____ equations for *different* _____.

► If ___ – values between "pieces" don't match, the fcn has a **jump**, indicated by ○'s on the ends.

EXAMPLE Graph $f(x)$, then find $f(-3), f(-1)$, and $f(2)$ by plugging the values into the correct equation.

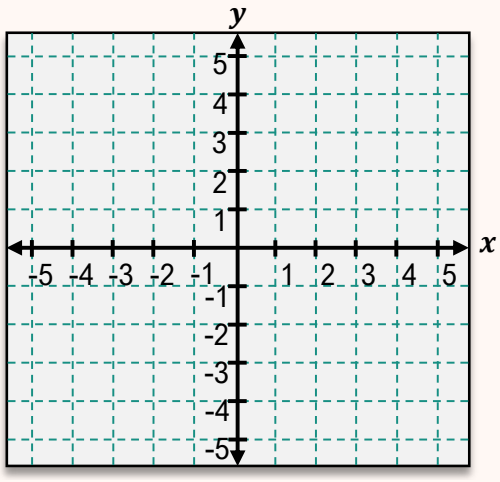
Recall **Functions**

$g(x) = -x$ $\quad$ $h(x) = x^2 - 4$



New **Piecewise Functions**

$$f(x) = \begin{cases} -x & if\ x < -1 \\ x^2 - 4 & if\ x \geq -1 \end{cases}$$



$f(-3) =$ ____

$f(-1) =$ ____

$f(2) =$ ____

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PRACTICE Using the piecewise function below, evaluate $f(-1)$.

$$f(x) = \begin{cases} 4 & \text{if } x < 3 \\ x^2 - 3 & \text{if } 3 \leq x < 8 \\ x^3 & \text{if } x \geq 8 \end{cases}$$

PRACTICE Using the piecewise function below, evaluate $f(5)$.

$$f(x) = \begin{cases} 2x + 4 & \text{if } x < 0 \\ x^2 & \text{if } 0 \leq x < 2 \\ x^3 + 5 & \text{if } x \geq 2 \end{cases}$$

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EXAMPLE Graph the following piecewise function.

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