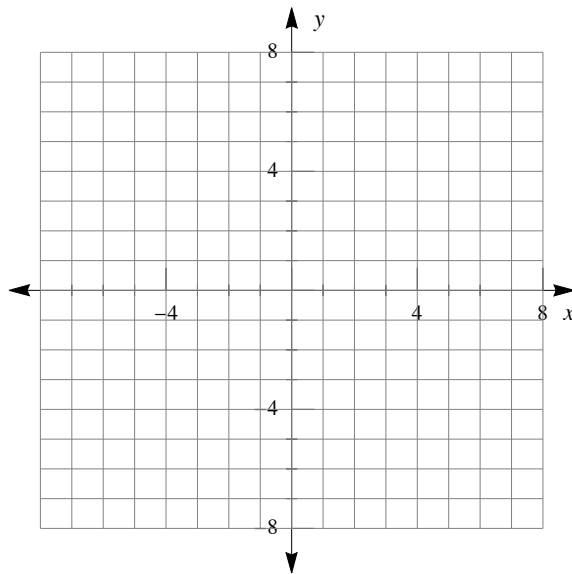


## Continuity 1: Piecewise Functions and Desmos

1. Using the template below, graph the following two functions:

i.  $g(x) = \frac{1}{2}x + 1$  for  $x < 4$

ii.  $h(x) = -x + 6$  for  $x \geq 4$



a. In your own words, describe what happens to the graph at  $x = 4$ .

b. **[Challenge]** Piece  $g(x)$  and  $h(x)$  together to make a piecewise function,  $f(x)$ . Write the equation for  $f(x)$ .

2. We are going to be using Desmos to help us visualize functions.

a. Go to <https://desmos.com>. Sign Up or Log In if you want to save your work.

b. Click on “Graphing Calculator” or go there directly: <https://desmos.com/calculator>.

c. To enter a piecewise function:

i. Start by typing the name of the function and an equal sign:  $f(x) =$

ii. Piecewise functions are inside “curly braces”:  $\{$  and  $\}$ . Type an opening curly brace:  $f(x) = \{$ .

iii. Each piece of the function starts with its domain condition followed by a colon:  $f(x) = \{x < 4 :$

iv. After the colon, type the function expression for that domain condition:  $f(x) = \{x < 4 : x/2 + 1$

v. Functions pieces are separated by commas:  $f(x) = \{x < 4 : x/2 + 1,$

vi. Add the second piece  $f(x) = \{x < 4 : x/2 + 1, x \geq 4 : -x + 6$

vii. Finish with the closing curly brace:  $f(x) = \{x < 4 : x/2 + 1, x \geq 4 : -x + 6\}$

Desmos does not graph the endpoints automatically.

3. Create your own piecewise function in Desmos (with at least two pieces). Take a screenshot and submit on Pathwright.