

Piecewise Function problem 1

Given $f(x) = \begin{cases} x+1 & \text{if } x < 1 \\ 3x+2 & \text{if } x \geq 1 \end{cases}$

a) Find the domain of the function.

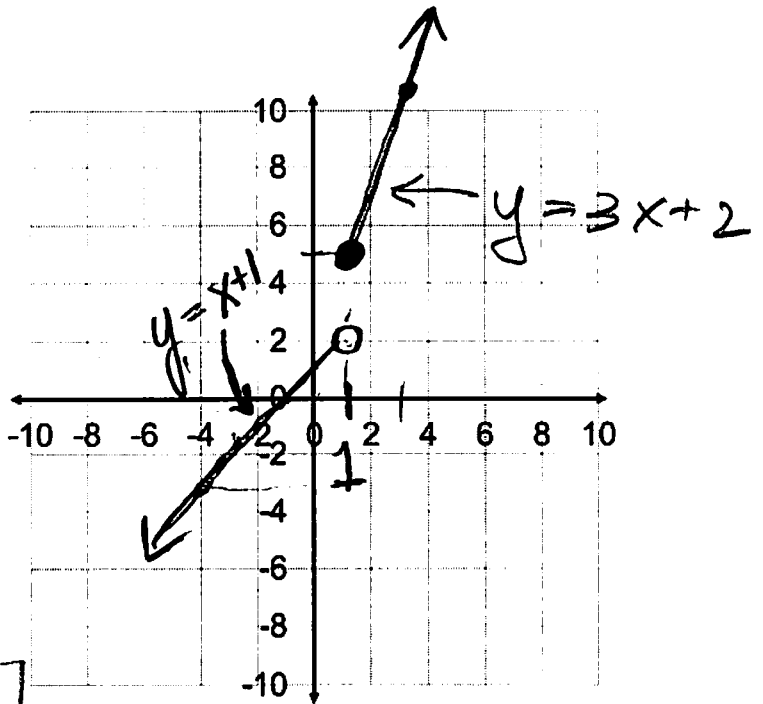
$$(-\infty, \infty)$$

b) Graph the function.

c) Find the range of the function.

$$(-\infty, 2) \cup (5, \infty)$$

d) Locate any intercepts.



y-int set $x=0$

$$y = x + 1$$

$$y = 0 + 1 = 1$$

$$(0, 1)$$

x-int set $y=0$

$$y = x + 1$$

$$0 = x + 1 \rightarrow x = -1$$

$$(-1, 0)$$

e) Find $f(-4)$

$$f(x) = x + 1 \text{ so } f(-4) = -4 + 1 = -3$$

f) Find $f(3) + f(0)$

$$f(3) = 3(3) + 2 = 9 + 2 = 11$$

$$f(0) = 0 + 1 = 1$$

$$\text{so } f(3) + f(0) = 11 + 1$$

$$= 12$$

g) Find x if $f(x) = 2$

$f(x)$ is never 2.

h) Find x if $f(x) = 0$

$$\text{Since } y = 0 \text{ } x = -1$$

i) Find $f(3) - f(-2)$

$$f(3) = 11$$

$$f(3) - f(-2)$$

$$f(-2) = -2 + 1 = -1 \quad 11 - (-1)$$

$$= 12$$