

2.4 Linear Functions

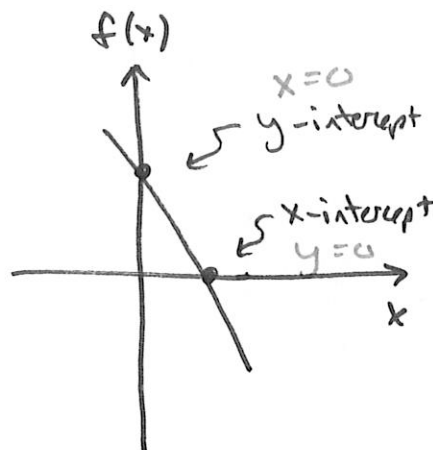
Day 1 (1)

$$f(x) = mx + b$$

$m = \text{slope}$

$$y = mx + b$$

$b = y\text{-intercept}$



Ex 1

Graph $f(x) = -2x + 6$

Give domain and range

y-intercept: $x = 0$

$$f(0) = -2(0) + 6$$

$$f(0) = 6$$

$$y = 6$$

(0, 6)

x-intercept

$$y = 0$$

$$0 = -2x + 6$$

$$f(x) = 0$$

$$\begin{array}{r} -b \\ \hline \end{array} \quad \begin{array}{r} -6 \\ \hline \end{array}$$

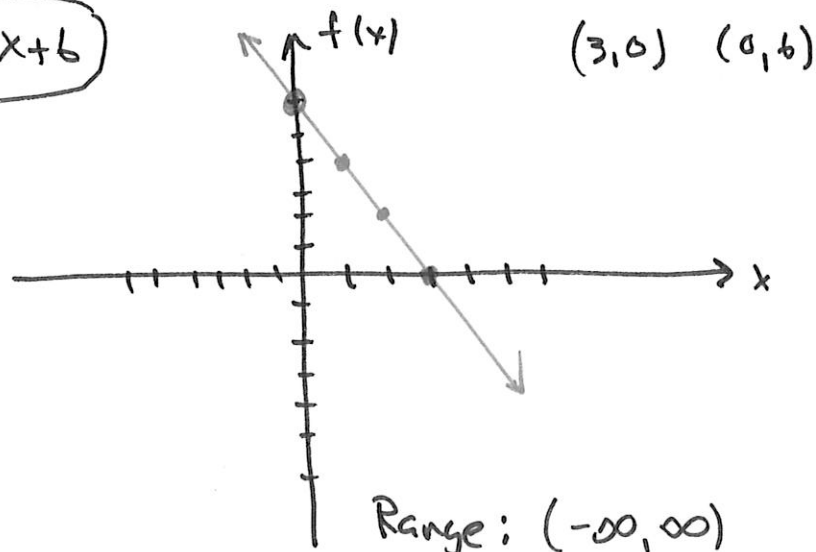
$$\begin{array}{r} -6 = -2x \\ \hline -2 \quad -2 \end{array}$$

$$3 = x$$

(3, 0)

$y = -2x + 6$

x	-2x+6	f(x)
0	0+6	6
1	-2+6	4
2	-4+6	2

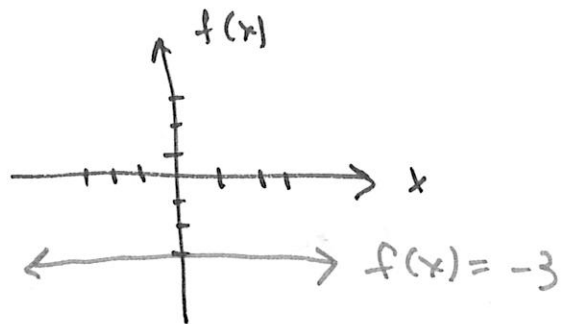


Domain (x): $(-\infty, \infty)$

Range: $(-\infty, \infty)$

Ex 2 Graphing a horizontal line \longleftrightarrow

Graph $f(x) = y = -3$ Give Domain & Range

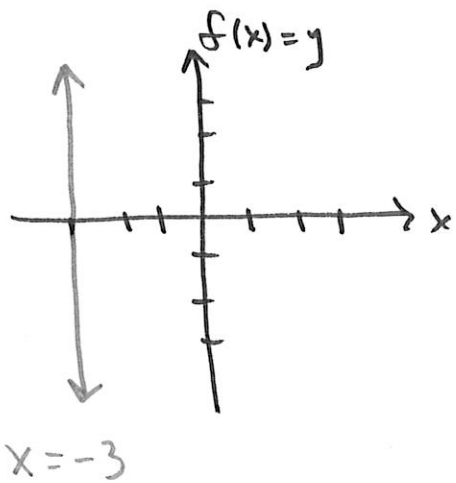


Domain: $(-\infty, \infty)$

Range: $\{-3\}$

Ex 3 Graphing a vertical line. \updownarrow

Graph $x = -3$ Give Domain & Range



Not Function!

Fails Vertical Line Test

Domain of Relation: $\{-3\}$

Range: $(-\infty, \infty)$

$$4x + 5y = 0$$

Slope = ?

y-intercept = ?

Get y by itself

$$\begin{array}{r} 4x + 5y = 0 \\ -4x \quad -4x \\ \hline 5y = -4x \end{array}$$

$$\frac{5y}{5} = \frac{-4x}{5}$$

$$y = -\frac{4}{5}x$$

$m = -\frac{4}{5}$
$b = 0$