

Section 1.1 Functions and Change

In this section we review function notation and linear functions

D, Date (Jan. '07)	9	10	11	12	13	14	15
T, High Temp (°F)	32	32	39	25	23	25	24

We say temperature, T , is a function of date, D .

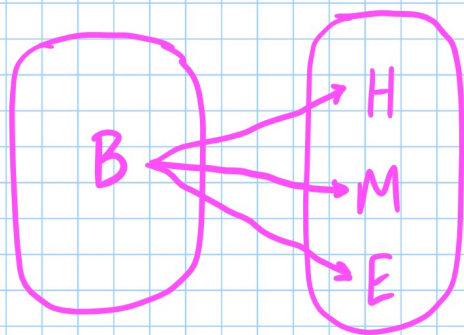
The dates are inputs, or domain.

The high temps are outputs, or range.

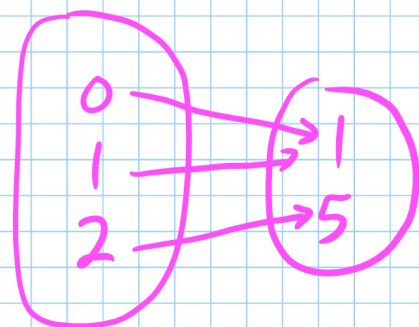
$$T = f(D)$$

temp ↗
↖ function of date

Note that there is only one output for each input making this a function



not a function



is a function

We can represent functions using tables, graphs, description in words, or equations.

In this section, we focus on linear functions

$f(x) = mx + b$ where $m = \text{slope}$, $b = \text{y-intercept}$.

$$D = (-\infty, \infty) \text{ or } \mathbb{R}$$

If $m \neq 0$, then $R = (-\infty, \infty) \text{ or } \mathbb{R}$

If $m = 0$, then $R = [b, b]$

↑ horizontal

ex: $(-2, 1)$ and $(2, 3)$

Find eq of line through these two points.

$$\text{Find slope, } m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 1}{2 - (-2)} = \frac{2}{4} = \frac{1}{2}$$

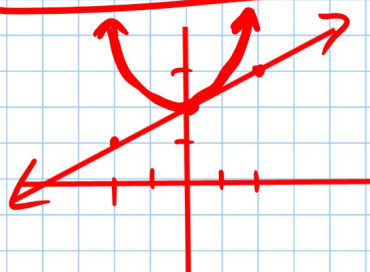
$$y = mx + b$$

$$3 = \frac{1}{2} \cdot 2 + b$$

$$3 = 1 + b$$

$$2 = b$$

$$y = \frac{1}{2}x + 2$$



Find slope and y-int. of

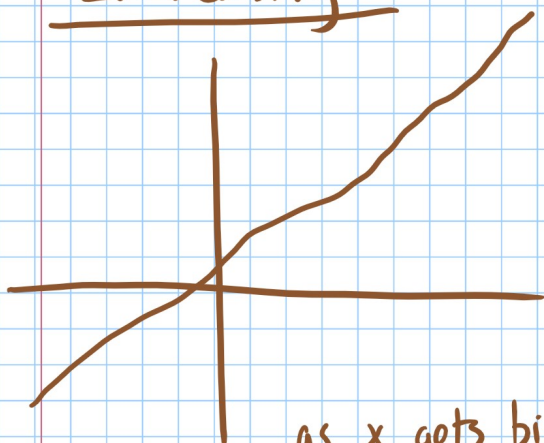
$$-4y + 2x + 8 = 0$$

$$\frac{-4y}{-4} = \frac{-2x - 8}{-4}$$

$$y = \frac{1}{2}x + 2$$

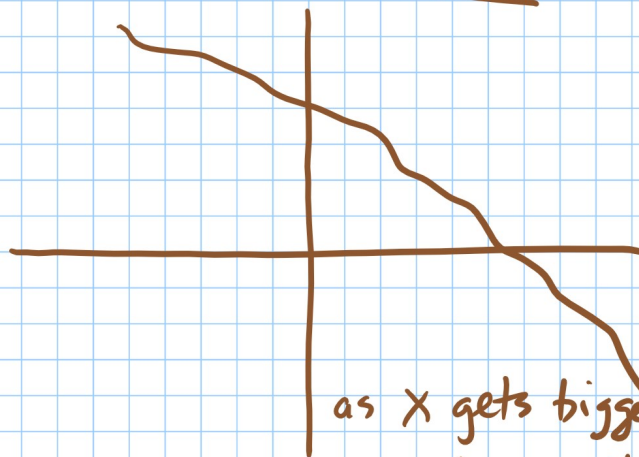
$$m = \frac{1}{2} \quad b = 2$$

Increasing

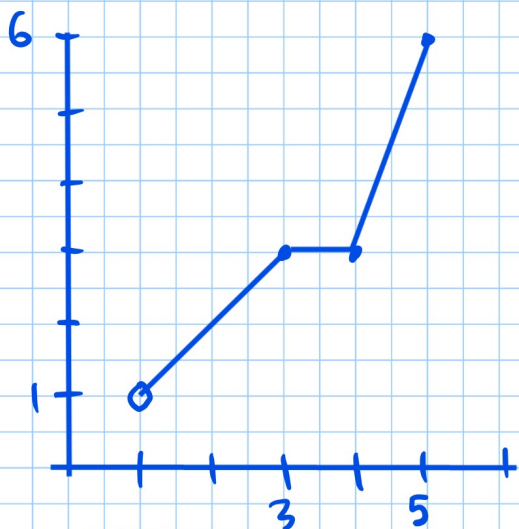


as x gets bigger
y gets bigger

Decreasing



as x gets bigger
y gets smaller



$$D = (1, 5]$$

$$R = (1, 6]$$

increasing on $(1, 3)$ and $(4, 5)$

constant on $(3, 4)$

P7-8 1, 4, 5, 9, 11, 14, 17, 27, 31

$$11) y = 5x - 3 \leftarrow$$

point (2, 1)

$$m = -\frac{1}{5}$$

