

Lesson 1: Graphing Linear and Constant Functions

Real Functions

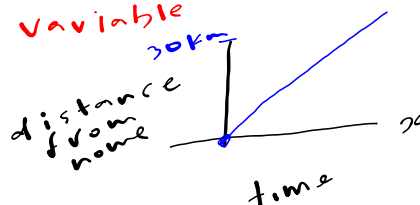
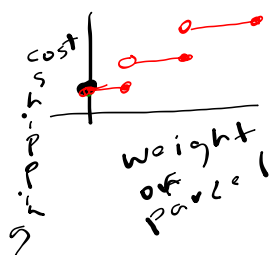
Definition: a function is a rule/equation that describes the relation between 2 variables x/y

* y depends on x

y is a function of x

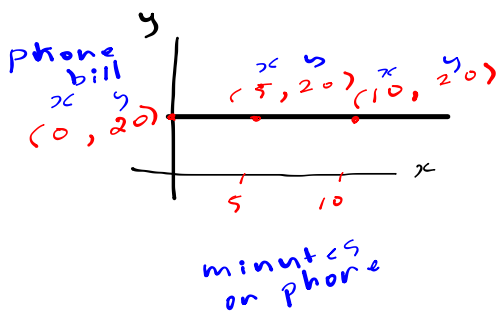
↑
dependant variable

↑
independant variable

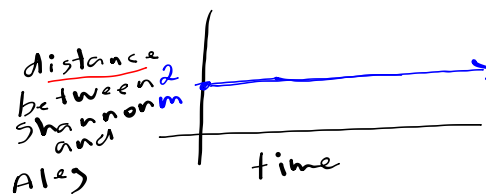


The Constant Function

- the y is constant / never changes value
- there is no slope / rate of change
- as x increases y stays same



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Graphing a Constant Function

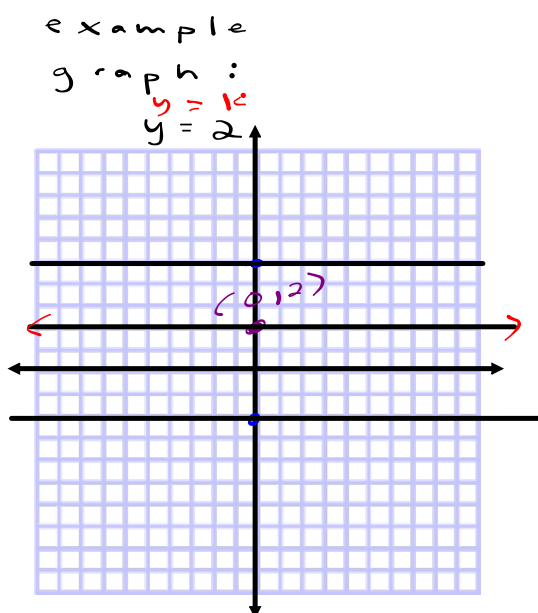
$$y = k$$

$$(0, k)$$

← y-intercept
(the point where the line intercepts/touches the y-axis)

step i. identify y-int.
label $(0, 2)$

step ii. Plot y-int
and draw horizontal
line through y-int



Graph $y = k$
 $l_1 : y = -2$
 $l_2 : y = 0$
 $l_3 : y = 5$
 $y = k$
 $(0, k)$ - y-int

Linear Function

(degree one)

- y changes
- rate of change (slope) is constant

$$y = mx + b \quad \text{or} \quad y = ax + k$$

┌──────────┐ parameters
└──────────┘ variables

x	y	$\Delta y = y_2 - y_1$
1	2	4 - 2 = 2
2	4	6 - 4 = 2
3	6	

$$m/a = \text{slope}$$

(steepness
and direction
of line)

$$b/k = y\text{-intercept}$$

(0, k)
(point on y-axis)

Graphing a Linear Function

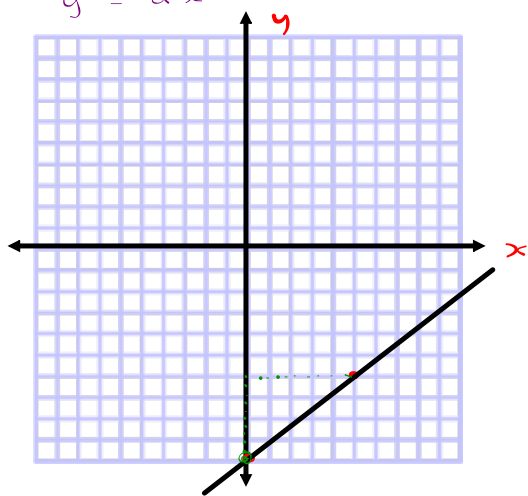
example : graph

$$5y - 4x + 50 = 0 - 50$$

$$5y = 4x - 50$$

$$y = \frac{4}{5}x - 10$$

$$y = ax + k$$



graph:

step i. solve/isolate y by performing opposite operations to both sides.

step ii identify y-int and slope

Label $y = ax + k$

y-int (0, -10)

$$a = \frac{4}{5} = \frac{\text{rise}}{\text{run}}$$

④ B
③ E
② { M
① { A
S

↑ Solving

step iii Construct table of values

x	y
0	-10
5	-6

use equation to find y

$$y = \frac{4}{5}x - 10$$

$$y = \frac{4}{5}x - 10$$

$$y = \frac{4}{5}(5) - 10$$

$$y = \frac{4}{5}(5) - 10$$

$$y = 4 - 10$$

$$y = 0 - 10$$

$$y = -6$$

$$y = -10$$

step iv. Plot points draw straight line.

Homwk: p 143 #11 } isolate y and
 p 144 #3 } graph lines
 answer key @ back

graph:

$$2y + 4x - 6 = 0 + 6$$

$$2y + 4x = 6 - 4x$$

$$\frac{2y}{2} = \frac{-4x + 6}{2}$$

$$y = -\frac{4}{2}x + \frac{6}{2}$$

$$y = -2x + 3$$

$$y = ax + k$$

$$a = -2$$

$$y - \text{int} = 3$$

x	y
0	3
5	-7

P₁

P₂

$$y = -2x + 3$$

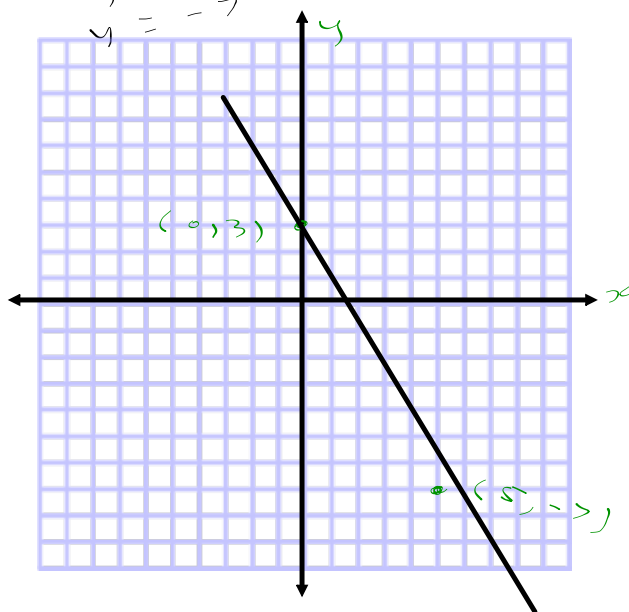
$$y = -2(0) + 3$$

$$y = 3$$

$$y = -2x + 3$$

$$y = -2(5) + 3$$

$$y = -7$$



graph

$$l_2: -6y + 6x - 12 = 0 + 12$$

$$-6y + 6x = 12 - 6x$$

$$\frac{-6y}{-6} = \frac{-6x + 12}{-6}$$

$$y = \frac{-6}{-6}x + \frac{12}{-6}$$

$$y = x - 2$$

x	y
0	-2
2	0

P₁

P₂

$$y = x - 2$$

$$y = 0 - 2$$

$$y = -2$$

$$y = x - 2$$

$$y = 2 - 2$$

$$y = 0$$

