



Linear Functions

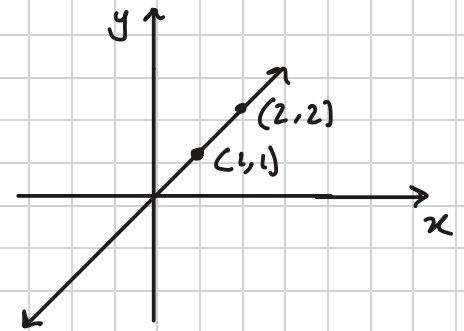
parent function $y = x$

Slope Intercept form
 $y = mx + b$

Standard Form

$$Ax + By = C$$

x	y
-2	-2
-1	-1
0	0
1	1
2	2



$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

Quadratic Functions

parent function $y = x^2$

① Standard Form

$$y = ax^2 + bx + c$$

$$y = -2x^2 + 12x - 17$$

② Factored Form

$$y = a(x-r)(x-s)$$

$$y = -7(x-4)(x+5)$$

③ Vertex Form

$$y = a(x-h)^2 + k$$

$$y = -2(x-3)^2 + 1$$

Four ways to represent a function

① Describing a situation using words
(e.g. a cannonball is shot, find max height)

② Using Math symbols and Algebra
e.g. $y = 2x^2 - 5x + 7$

③ Using a table of values

x	$y = x^2$	
-3	$(-3)^2 = 9$	$(-3, 9)$
-2	4	$(-2, 4)$
-1	1	$(-1, 1)$
0	0	$(0, 0)$
1	1	$(1, 1)$
2	4	$(2, 4)$
3	9	$(3, 9)$

④ Visually / on a graph

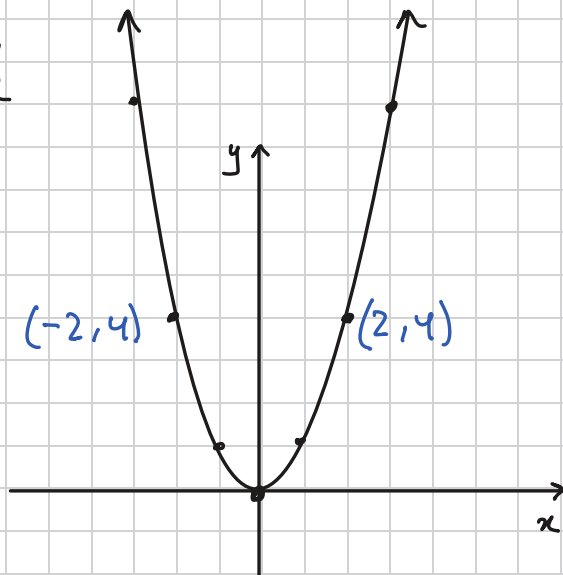


Table of values

This skill is not too involved in the rest of the unit. But it's important and does show up on tests.

*If the first differences are constant
then it is a Linear Function*

*If the second differences are constant
then it is a Quadratic Function*

x	y	1 st Difference	2 nd Difference
1	5	$11-5$ +6	
2	11	$21-11$ +10	$10-6$ 4
3	21	$35-21$ +14	$14-10$ 4
4	35		
5			
6			

The second differences
the same number =
The second differences
are constant

In this case its a quadratic

If neither the first
nor the second
differences are constant
then it is not
a linear or quadratic
function. It's something
else we don't have
to worry about.