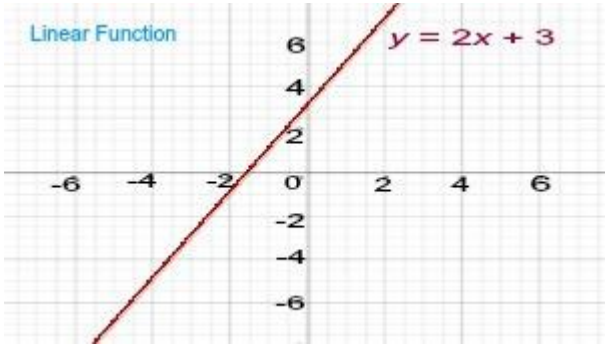
linear function

linear function can be defined as a polynomial with highest degree equal to 1.

Linear functions are functions that appear as *straight lines* when they are graphed.

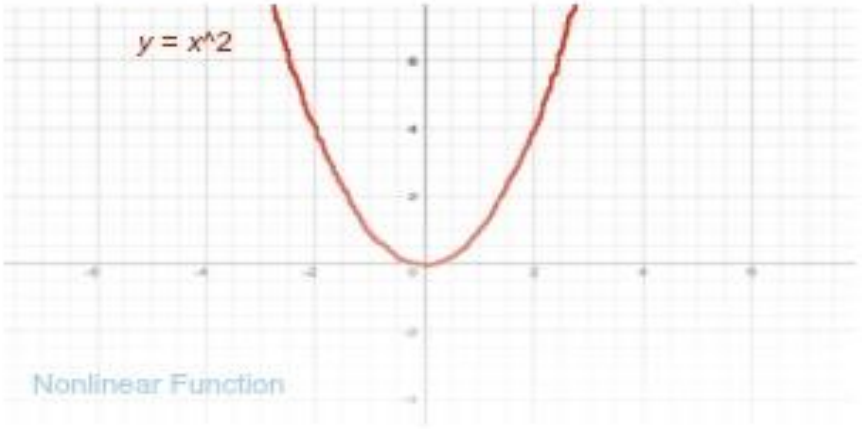
For example, $y = 2x + 3$ is a linear function. Notice it is a polynomial with highest exponent equal to 1. Also, if we consider some random points that satisfy the equation, say (-1, 1), (0, 3), and (7, 17), we see that the slope of the line between any two pairs of these is the same.



Nonlinear Functions

Non-linear function is a function that is not a straight line and has a degree other than 1.

An example of a nonlinear function is $y = x^2$. This is nonlinear because, although it is a polynomial, its highest exponent is 2, not 1. Also, if we consider some random points that satisfy the equation, say (-3, 9), (-1, 1), and (4, 16), we see that when we calculate the slope of the line between these points, we get different results.
(-3, 9) and (-1, 1): Slope: (1 - 9) / (-1 - (-3)) = -8 / 2 = -4
(-3, 9) and (4, 16): Slope: ((16 - 9) / (4 - (-3)) = 7 / 7 = 1



Nonlinear Function