Assignment 2

Mirha Sidheek

Download all python codes from

https://github.com/mirhasidheek7213/InternshipIITH/tree/main/Assignment−2/Codes

and latex-tikz codes from

https://github.com/mirhasidheek7213/InternshipIITH/blob/main/Assignment−2/Assignment2.tex

1 Question No. 1.23 - Linear forms

Find the equation of the line, which makes intercepts −3 and 2 on the x and y axes respectively.

2 Solution

$$Given, x-intercept = -3, y-intercept = 2 \quad (2.0.1)$$

Hence , the line cuts through the x-axis at $\begin{pmatrix}-3\\0\end{pmatrix}$ and the line cuts through the y-axis at $\begin{pmatrix}0\\2\end{pmatrix}$

Slope of a line,

$$\tan\theta = m = \frac{(y_2)-(y_1)}{(x_2)-(x_1)} \quad (2.0.2)$$

$$\tan\theta = m = \frac{2-0}{0-(-3)} \quad (2.0.3)$$

$$\tan\theta = m = \frac{2}{3} \quad (2.0.4)$$

Slope-point form of a line is,

$$y - y_o = m(x - x_o) \quad (2.0.5)$$

$$= y - 2 = \frac{2}{3}(x-0) \quad (2.0.6)$$

$$= 3(y-2) = 2x \quad (2.0.7)$$

$$= 2x - 3y + 6 = 0 \quad (2.0.8)$$

The Equation of the line is,

$$2x - 3y + 6 = 0 \quad (2.0.9)$$

Since the line passes through the points $\begin{pmatrix}-3\\0\end{pmatrix}$ and $\begin{pmatrix}0\\2\end{pmatrix}$, The line AB is plotted using these points as shown below.

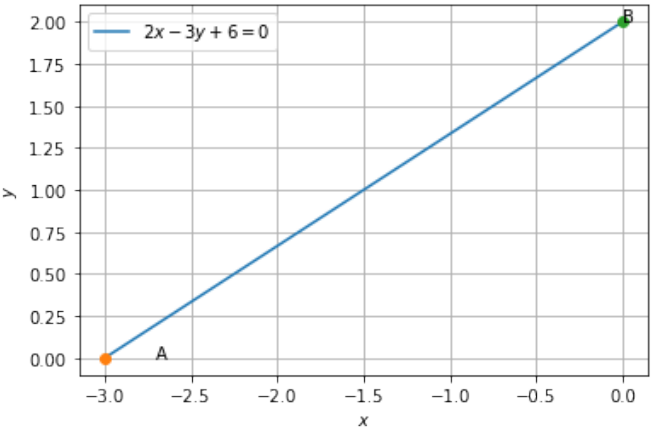

Fig. 0: The line $2x - 3y + 6 = 0$