Assignment 5

nagajyothi

Download all python codes from

https://github.com/nagajyothi/ASSIGNMNT5/Assignment5.py

and latex-tikz codes from

https://github.com/nagajyothi/ASSIGNMNT5/main.tex

1 Question No.2.70

In each of the following exercises,find the equation of the parabola that satisfies the following conditions:

e. Focous $\begin{pmatrix}-2\\0\end{pmatrix}$ vertix $\begin{pmatrix}0 & 0\end{pmatrix}$.

2 solution

Given that focus and vertex.

So, vector equation of the parabola is,

$$\text{Focus} = \begin{pmatrix}-a\\0\end{pmatrix} \tag{2.0.1}$$

$$-a = -2 \tag{2.0.2}$$

$$a = 2 \tag{2.0.3}$$

$$\mathbf{x}^T \begin{pmatrix}0 & 0\\0 & 1\end{pmatrix}\mathbf{x} + 2\begin{pmatrix}-2a & 0\end{pmatrix}\mathbf{x} + 0 = 0 \tag{2.0.4}$$

$$\mathbf{x}^T \begin{pmatrix}0 & 0\\0 & 1\end{pmatrix}\mathbf{x} + 2\begin{pmatrix}-4 & 0\end{pmatrix}\mathbf{x} + 0 = 0 \tag{2.0.5}$$

$$\mathbf{y^2 = -8x} \tag{2.0.6}$$

Plot of given parabola

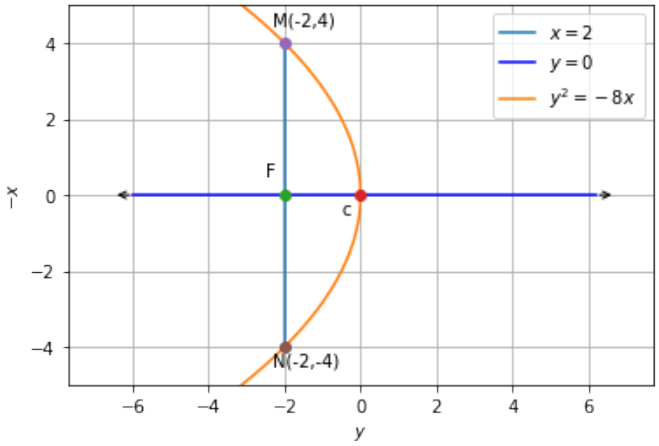

Fig. 0: Parabola $y^2 = -8x$