

# Assignment 2

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Download all python codes from

<https://github.com/kavyakamal66/IITH-INTERNSHIP/blob/main/Assignment2/code2.py>

and latex-tikz codes from

[https://github.com/kavyakamal66/IITH-INTERNSHIP/blob/main/Assignment2/Assignment\\_2.tex](https://github.com/kavyakamal66/IITH-INTERNSHIP/blob/main/Assignment2/Assignment_2.tex)

The Equation of the line is,

$$(dy/dx) = y/x \quad (2.0.3)$$

$$x dy = y dx \quad (2.0.4)$$

$$x(dy/dx) - y = 0 \quad (2.0.5)$$

Assume value of slope as:

$$m = 2 \quad (2.0.6)$$

Equation of the curve and derivative is :

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

$$(dy/dx) = 2 \quad (2.0.8)$$

## 1 QUESTION No. 1.77 - LINEAR FORMS

Form the differential equation representing the family of curves  $y = mx$ , where  $m$  is an arbitrary constant.

The equation of the curve and its derivative is plotted above.

## 2 SOLUTION

Given equation of curve,

$$y = mx \quad (2.0.1)$$

Differential both sides of 2.0.1

We get,

$$(dy/dx) = m \quad (2.0.2)$$

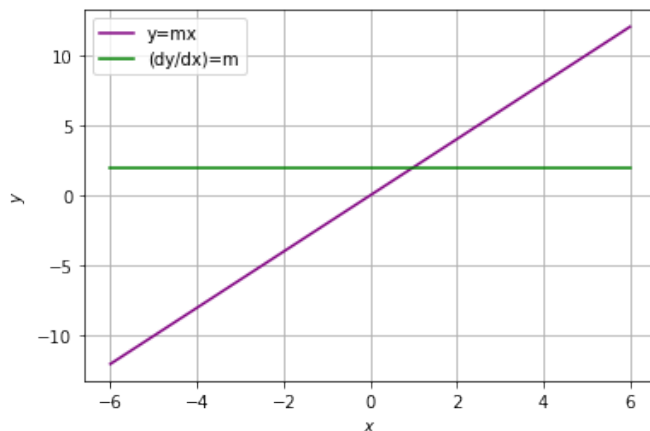


Fig. 0: The lines  $y = mx$  and  $y = m$