North South University

Department of Mathematics and Physics

Trial Quiz

Name              : Joy Kumar Ghosh

Student ID     : 2211424 6 42

Course No.    : MAT 116

Course Title : Precalculus

Section          : 20

Date              : 18 February, 2022

Ans. to the ques. no. :01

a) Explain even and odd function.

⇒

The words even and odd, when applied to a function f, describe the symmetry that exists for the graph of the function.

Even function :

A function f is even, if and only if, whenever the point $(x,y)$ is on the graph of f then the point $(-x,y)$ is also on the graph.

It means, a function is even if and only if its graph is symmetric with respect to the y-axis.

$$\therefore f(-x) = f(x)$$

Odd function :

A function f is odd, if and only if, whenever the point $(x,y)$ is on the graph of f then the point $(-x,-y)$ is also on the graph.

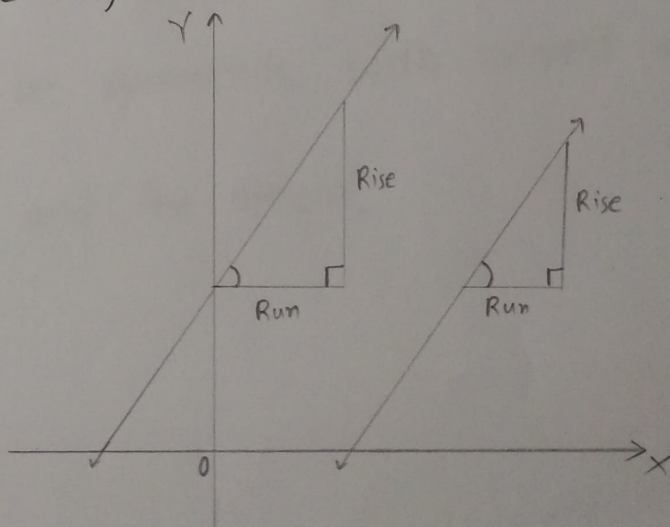It means, a function is odd if and only if its graph is symmetric with respect to the origin.

$$\therefore f(-x) = -f(x)$$

b) Explain the phenomena for two lines being parallel and perpendicular.
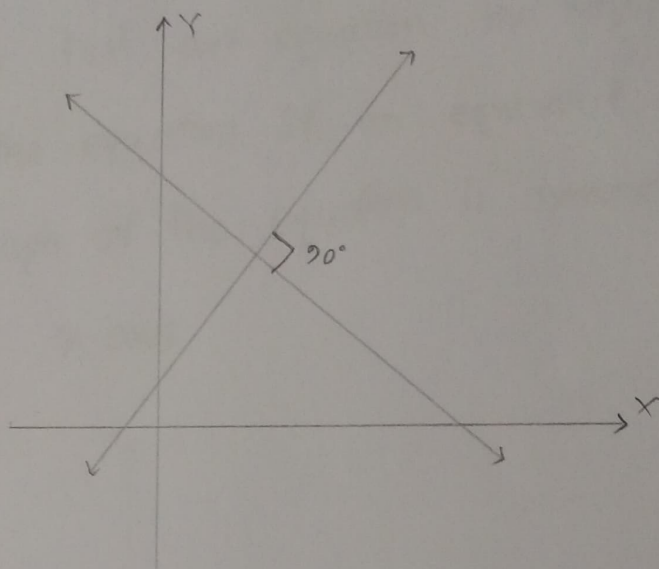
$\Rightarrow$

Parallel lines:

Two nonverctical lines are parallel if and only if their slopes are equal and they have different y-intercepts. It means they don't intersect each-other and don't have any common point.

## Perpendicular lines :

Two nonvertical lines are perpendicular if and only if the product of their slopes is -1. They intersect each-other at a right angle (90°).



c) Explain symmetry of a function.

⇒

A graph can be symmetric with respect of to the x-axis, y-axis and the origin.

i) x- Axis :

A graph is said to be symmetric with respect to the x-axis if, for every point $(x,y)$ on the graph, the point $(x,-y)$ is also on the graph.
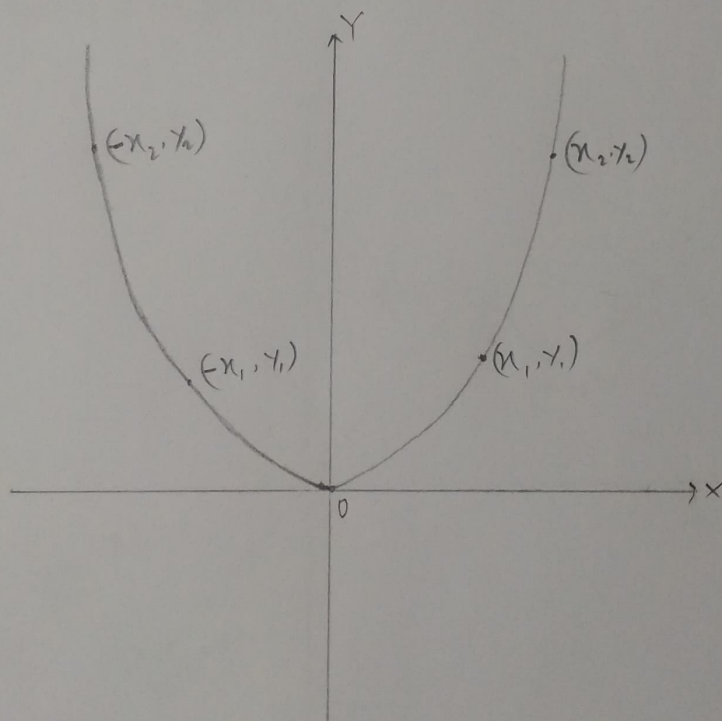
We can simply test an equation by replacing y by -y in the equation. If an equivalent equation results, the graph of the equation is symmetric with respect to the x-axis.
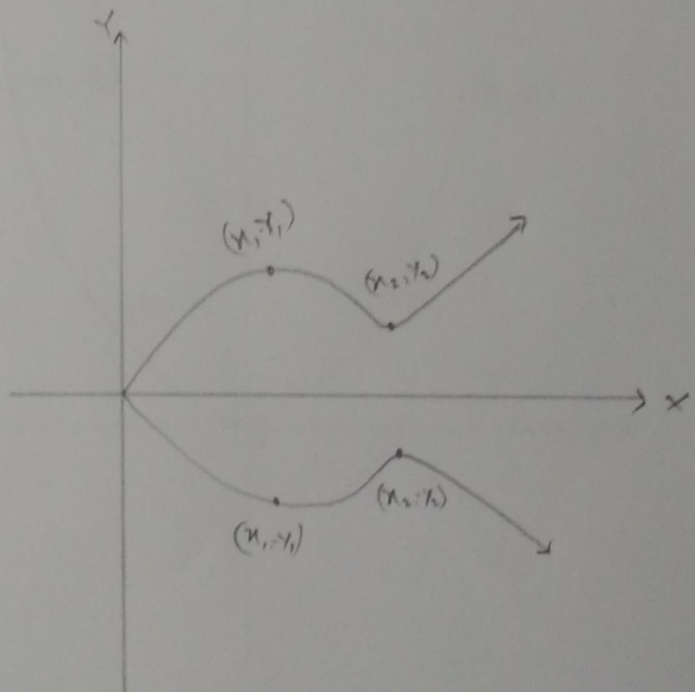
ii) y-Axis :

A graph is said to be symmetric with respect to the y-axis if, for every point $(x,y)$ on the graph, the point $(-x,y)$ is also on the graph.
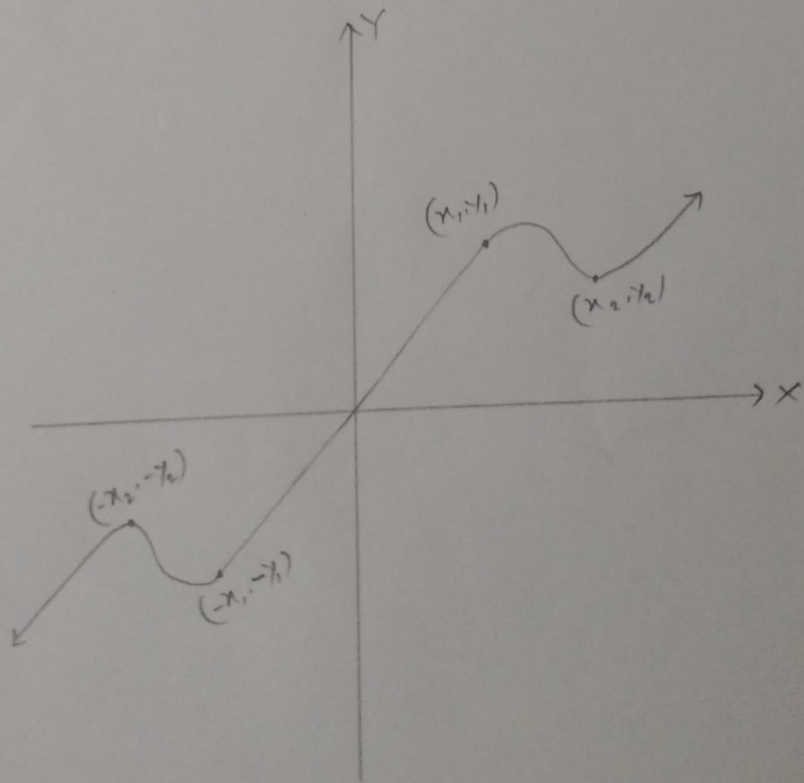
We can simply test an equation by replacing $x$ by $-x$ in the equation. If an equivalent equation results, the graph of the equation is symmetric with respect to the y-axis.

(ii) origin :

A graph is said to be symmetric with respect to the origin if, for every point $(x,y)$ on the graph, the point $(-x, -y)$ is also on the graph.

We can simply test an equation by replacing $x$ by $-x$ and $y$ by $-y$ in the equation. If an equivalent equation results, the graph of the equation is symmetric with respect to the origin.



Thank You