3055 BA SANGAM COLLEGE

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WORKSHEET 19

School: Ba Sangam College **Year / Level: 11**

Subject: Mathematics **Name of Student: _____**

Strand	3 – COORDINATE GEOMETRY
Sub strand	Parallel and perpendicular lines
Content Learning Outcome	Study and use gradients of parallel and perpendicular lines

PARALLEL AND PERPENDICULAR LINES

PARALLEL LINES

Objective: To find the equation of a second line parallel to a given line

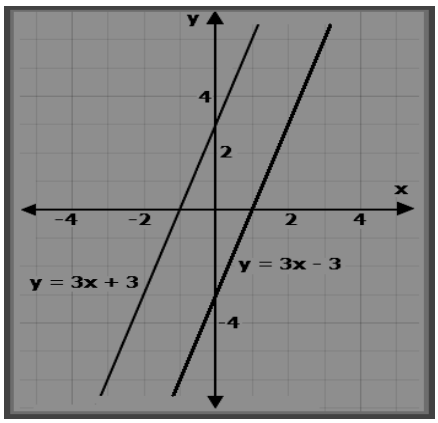
- Two or more lines are considered to be parallel if and only if they meet three conditions given below.
  1. Their gradients are equal. This means the gradient of the first line m_1 is equal to the gradient of the second line m_2.

$$m_1 = m_2$$

  2. They do not intersect at any point.
  3. Their separation distance is constant.

Example 1

The graphs of the function $y = 3x + 3$ *and* $y = 3x - 3$ are parallel to each other because oth graphs have the same gradient ***m = 3***.



Example 2

Find the equation of the straight line parallel to the graph of the function $y = 2x + 2$ and passes through the point

(3, 5).

Solution

$$m_1 = m_2 = 2$$

$$y - y_1 = m(x - x_1) \rightarrow y - 5 = 2(x - 3)$$

$$y - 5 = 2x - 6$$

$$y = 2x - 6 + 5$$

$$\therefore y = 2x - 1$$

Example 3

Find the equation of the straight line parallel to the graph of the function $y = 4x + 1$ and passes through the point $(2, 6)$

Solution

$m_1 = m_2 = 4$

$$y - y_1 = m(x - x_1) \rightarrow y - 6 = 4(x - 2)$$

$$y - 6 = 4x - 8$$

$$y = 4x - 8 + 6$$

$$\therefore y = 4x - 2$$

EXERCISE

1. What is the equation of a line that passes through the point (4,-5) and is parallel to $3x + 2y = 12$?

   (2m)

2. What is the equation of a line that is parallel to $y = 2x - 4$ and passes through the point (3, 7)?

   (2m)

The End