



3055 BA SANGAM COLLEGE

PH: 6674003/9264117 E-mail: basangam@connect.com.fj



WORKSHEET 12

BA SANGAM COLLEGE

YEAR 11

SUBJECT: MATHEMATICS

NAME OF STUDENT: _____

STRAND	GRAPHS
SUB-STRAND	QUADRATIC GRAPH
Content Learning Outcome	➤ Study and illustrate graphs

QUADRATIC GRAPH IN THE FORM $y = ax^2 + bx + c$

Objective : at the end of the lesson students should be able to sketch quadratic graph in the form $y = ax^2 + bx + c$

To sketch the graph of $y = ax^2 + bx + c$:

STEP 1 : calculate the x and y intercepts of the graph. In order to do this, factorise the quadratic equation using either Type I or Type II method.

STEP 2 : calculate the coordinates of the vertex/ turning point and draw your axis of symmetry. The x value of the vertex will act as the axis of symmetry.

STEP 3 : check for the shape of the graph

STEP 4 : plot the points and sketch the graph

EXAMPLE 3

Sketch the graph of $y = x^2 + 5x + 6$

First factorise $y = x^2 + 5x + 6$

We get $y = (x + 3)(x + 2)$ using Type I method

Step 1 : calculate the x and y intercepts of the graph.

$$x \text{ int } y = 0$$

$$0 = (x + 3)(x + 2) \text{ \{ apply null factor law \}}$$

Therefore, x int are (-3, 0) and (-2, 0) { remember to write the x int in ascending order }

$$y \text{ int } x = 0$$

$$y = (0 + 3)(0 + 2)$$

$$y = 6$$

Therefore, y int is (0, 6)

STEP 2 : calculate the coordinates of the vertex/ turning point.

Vertex is the midpoint of the two x intercepts.

$$\text{Vertex } x = \frac{-3 + -2}{2}$$

$X = -2.5$ and this is also the axis of symmetry.

Now substitute this x value of the vertex into the original equation to obtain the y value of the vertex.

$$y = (x + 3)(x + 2)$$

$$y = (-2.5 + 3)(-2.5 + 2)$$

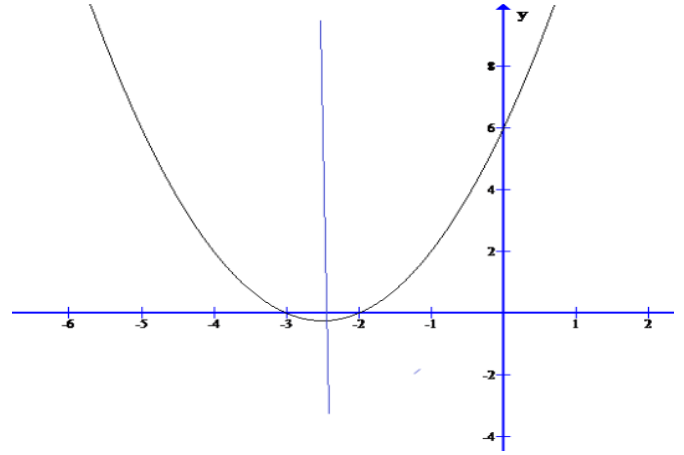
$$y = -0.25$$

Therefore, the vertex of the graph is (-2.5, -0.25)

STEP 3 : check for the shape of the graph

Positive $x^2 \rightarrow$ U shape curve { \rightarrow
negative x^2 \cap shape curve }

STEP 4 : plot the points and sketch the graph



Exercise 1

Sketch the following graphs :

a. $y = x^2 - 6x + 9$

(3m)

b. $y = -x^2 + x + 6$

(3m)

THE END