Math Notes

Quadratic Graphs

What is a quadratic graph?

- A quadratic graph is a graph where the shape of the line is a parabola.
- General form of the quadratic formula is $y = ax^2 + bx + c$ where a cannot be 0.
- The highest or lowest point of the graph is called a turning point
- Line of symmetry is a line that is parallel to the y axis and cuts the turning point.
- In the quadratic formula, c is the y intersect.
- The origin is at (0 , 0)

Finding the data

- With the formula, you can determine the shape of the graph and the y intersect (c).
- After solving the equations, the roots will determine where the graph cuts the x axis, unless the graph has no real roots.
- Obtain the turning point from the equation by completing the square.

Shape of the graph

- The general form of a quadratic graph is $y = ax^2 + bx + c$ where a cannot be 0.
- When $a > 0$, the quadratic graph is a minimum graph, with a 'U' shape
- When $a < 0$, the quadratic graph is a maximum graph, with a 'n' shape

Y-intersect

- From the general form, the value of c determines the y-intersect.
- It is in the form (0 , c), where 0 is the x coordinate and c is the y coordinate.

Roots

- From solving the equation after substituting y with 0, roots are obtained.
- Determines the x - intercept
- There can be 2 distinct roots, repeated roots or no real roots.
- The coordinates of the roots are in the form (x , 0)

Math Notes

Turning Point
- After completing the square, the formula should be in the form $y = a(x-h)^2 + k$ where a is not 0
- The turning point's coordinate is (h , k)
- The line of symmetry's equation is $x = h$
- In the case where h or k is not present, replace their respective value with 0.

Drawing the graph
- Draw the axes, and make sure the graph takes up at least 2/3 of the graph paper
- Label the x and y axes, origin and the respective values.
- Mark the y-intersect, roots and the turning point.
- Draw the curve (using a flexi-curve)
- Label the lines (Eg. $y = 3x^2 + 2x + 1$)

REMEMBER: ALL WORKINGS TO BE DONE ON GRAPH PAPER