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SUBJECT: MATHEMATICS

CLASS: SS3

TOPIC: FINDING THE EQUATION OF A GIVEN CURVE

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It often occurs that some mathematical statements are made which when interpreted numerically give rise to quadratic equations. Care must be taken when interpreting such statements so as not to misinterpret them.

When such statements give rise to quadratic equations, any of the methods mentioned earlier can be applied to solve such equation. Just as some mathematical statement when interpreted numerically result in quadratic equations as discussed earlier, so others will lead to simultaneous equations.

Incidentally, a statement may lead both to quadratic and simultaneous equations at the same time. When this happens, you are advised to use the type of equation that you understand most as this will not make any difference in your answer.

Equation of Degree Two

Equation of degree two have the general form $= ax^2 + bx + c$. the graphical representation is called a Parabola

A parabola has two shapes. The shape depends on whether the coefficient of x^2 is positive or negative.

a>0

A

B

a<0
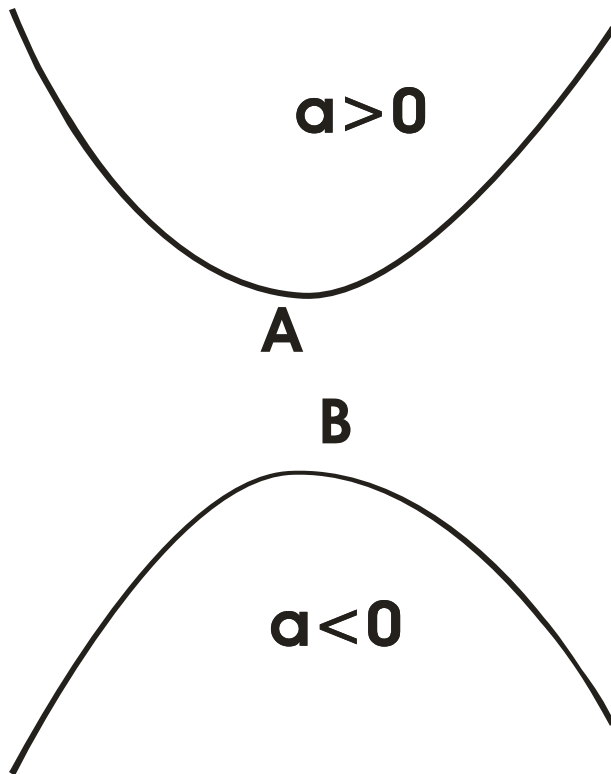
x -intercept

To find the x-intercept, put $y = 0$ and solve for x. recall that the values of x for which $y = 0$ are the zeroes of the equation
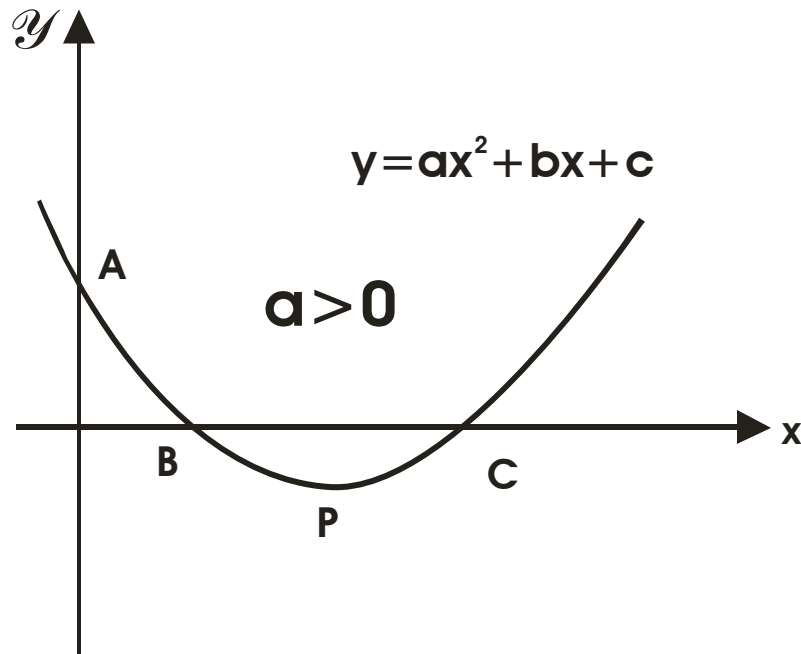
y -intercept

put $x \neq 0$ and solve for y

Turning Points

In the diagram above, the lowest point A on the curves is a turning point and it is called **Minimum Point**.

In the diagram above, the highest point *B* on the curve is also a turning point and it is called **Maximum point**

$y = ax^2 + bx + c$

$a > 0$

Assignment: State whether or not each of the following equation is a maximum or minimum curve

(a) $y = 3x^2 + 4x + 8$

(b) $y = -x^2 - 24x + 10$

(c) $y = -x^2 - 6x - 4$

(d) $y = -3 + 2x - x^2$