MATHS CLASS X Continuation

CHAPTER 5 (QUADRATIC EQUATIONS IN ONE VARIABLE)

General direction for the students :-Whatever be the questions solved , everything must be copied in the Maths Copy and then do the Home work in the same Copy.

EXERCISE 5.4

Q5 i) $x^2 + 4kx + (k^2 - k + 2) = 0$

We know here Discriminant $D = b^2 - 4ac = 0$

$\Rightarrow (4k)^2 - 4.1(k^2 - k + 2) = 0$

$\Rightarrow 12k^2 + 4k - 8 = 0$

$\Rightarrow 4(3k^2 + k - 2) = 0$

$\Rightarrow 3k^2 + k - 2 = 0$

$\Rightarrow (k + 1)(3k - 2) = 0$

$\Rightarrow k = -1 , \frac{2}{3}$

Q11. $x^2 + kx + 4 = 0$

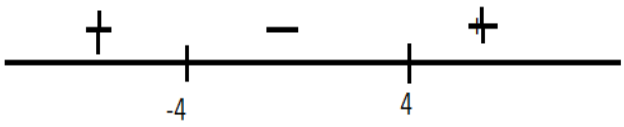
A/Q $b^2 - 4ac \geq 0$

$\Rightarrow k^2 - 4.1.4 \geq 0$

$\Rightarrow (k - 4)(k + 4) \geq 0$ *note the step*

Critical points -4 , 4

By Method of interval



$\Rightarrow$ The least positive value of k=4

HOME WORK: Remaining questions from the Exercise 5.4

EXPERIMENT NO.2

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Points to remember .

**Read and understand the experiment.*

**In the Maths Practical Copy write down AIM, MATERIAL REQUIRED , METHODOLOGY , TABULAR COLUMN and CONCLUSION on the ruled page. DIAGRAM and CALCULATION on the plane page.*

**Follow the PROCEDURE properly to get the correct conclusion.*

** All the three graph papers must be attached to the Maths lab copy properly.*

AIM: To determine the nature of roots of quadratic equations graphically and also find the real roots from the graph .

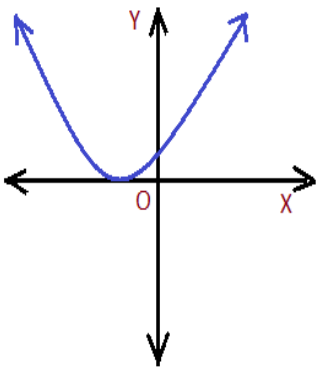
MATERIAL REQUIRED: 1) Three graph papers 2) Ruler & Pencil 3) Three quadratic functions.

METHODOLOGY:-

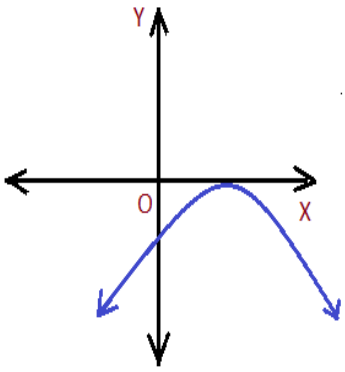
i) If the graph of the quadratic function touches the X-axis , then the corresponding quadratic equation have Real and Equal roots.

ii) If the graph of the quadratic function Does not touches the X-axis , then the corresponding quadratic equation have Imaginary roots.

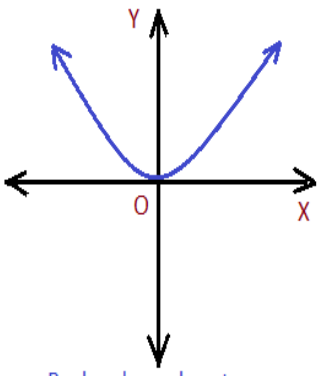
iii) If the graph of the quadratic function intersects the X-axis , then the corresponding quadratic equation have Real and Unequal roots.



Real and equal roots



Real and equal roots



Real and equal roots

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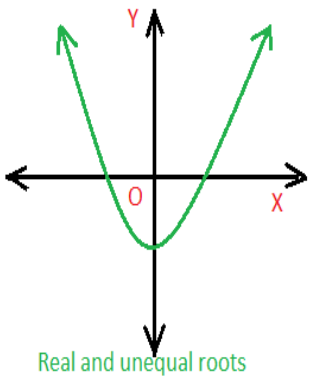
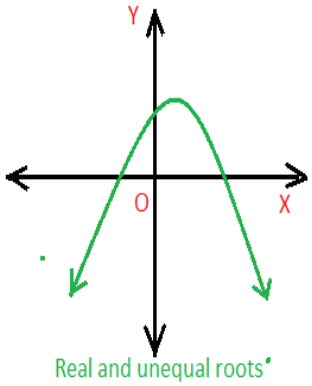
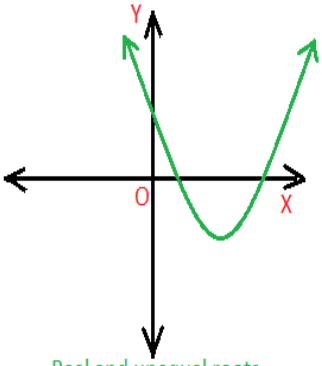


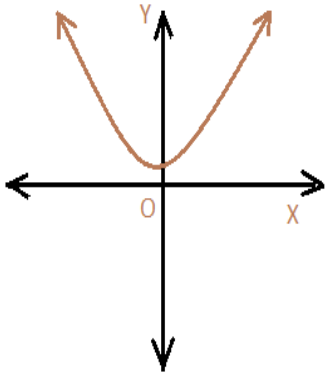
Real and unequal roots



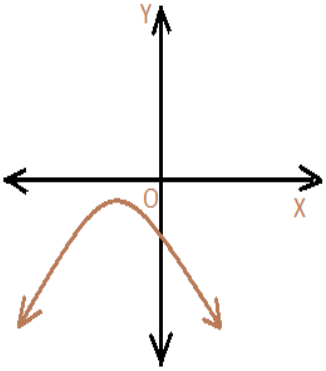
Real and unequal roots



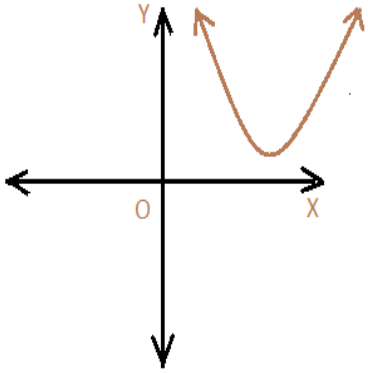
Real and unequal roots



Imaginary roots



Imaginary roots



Imaginary roots

PROCEDURE: Follow all the steps below in order

Step 1. Select any one equation from each set given below.

1st set	2nd set	3rd set
$y = x^2 - 2x + 1$	$y = x^2 + x - 6$	$y = x^2 + 2x + 2$
$y = x^2 + 2x + 1$	$y = x^2 - x - 6$	$y = x^2 - 2x + 2$
$y = x^2 - 4x + 4$	$y = x^2 - 3x - 4$	$y = x^2 + 4x + 5$
$y = -x^2 + 4x - 4$	$y = x^2 + 3x - 4$	$y = x^2 - 4x + 5$
$y = x^2 + 6x + 9$	$y = x^2 + 4x - 5$	$y = -x^2 + 2x - 2$
etc	etc	etc

Step 2. Find the values of 'y' when x = 0,1,-1,2,-2,3 , -3, ...for each equation.

Step 3. Plot the points of each equation in different graph sheets.

Step 4. Connect the points by a smooth curve .

Step 5. Observe the graph .If the curve touches or intersects X-axis at any point , then corresponding value(s) of X is the roots of the equation.

CALCULATION:

1st equation , y = ----------

x	0	1	-1	2	-2	3	-3	4	-4	5	-5	6
y												

2nd equation , y = ----------

x	0	1	-1	2	-2	3	-3	4	-4	5	-5	6
y												

3rd equation, y = -------

X	0	1	-1	2	-2	3	-3	4	-4	5	-5	6
y												

CONCLUSION:

1) The equation----------has real & distinct roots and the roots are --------& -------.

2)The equation ----------has equal roots and the roots are------&-------.

3) The equation ----------has no real roots.

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