Assignment

CLASS X

Ch1. Real numbers, Ch2 Polynomials Ch3. Pairs of linear eq Ch8. Trigonometry.

Q1. Use Euclid's division Lemma to show that the square of any positive integer is either of the form $3m$ or $3m+1$ for some integer m.

Q2. Prove that (i) $5-2\sqrt{3}$, (ii) $\frac{7\sqrt{3}-1}{5}$, (iii) $(\sqrt{3}-\sqrt{2})^2$ are irrational numbers.

Q3. Show that 12^n cannot end with digit 0 or 5 for any natural number n.

Q4. Prove that $\sqrt{5}$ is an irrational number.

Q5. Find the zeroes of the following polynomials and verify the relationship between its zeroes and coefficients.

(i) $6x^2-3-7x$ ii) $4x^2+5\sqrt{2}x-12$ iii) $9x^2-4$

Q6. Find the quadratic polynomial, the sum and product of whose zeroes are :— (i) 5 and 6, (ii) $\sqrt{2}$ and $-\frac{3}{2}$

Q7. If α, β are the zeroes of the polynomial $2x^2-5x+7$, then find a polynomial whose zeroes are $2\alpha+3\beta$, $3\alpha+2\beta$.

Q8. If α and β are the zeroes of the quadratic polynomial $3x^2+2x-6$, then find the value of

(i) $\frac{1}{\alpha}+\frac{1}{\beta}$ (ii) $\alpha^2+\beta^2$ iii) $\frac{\alpha}{\beta}+\frac{\beta}{\alpha}$.

{Ans: i) $\frac{1}{3}$, ii) $\frac{40}{9}$}

Q9. Check whether $g(x)=x^3-3x+1$ is a factor of $p(x)=x^5-4x^3+x^2+3x+1$.

Q10. Find all zeroes of $2x^4-3x^3-3x^2+6x-2$, if it is known that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.

Q11. On comparing the ratios $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find whether the lines representing the following pairs of linear equations intersect at a point, are parallel or coincident.

(i) $5x - 4x + 8 = 0$
$7x + 6y - 9 = 0$

ii) $6x - 3y + 10 = 0$
$2x - y + 9 = 0$

iii) $9x + 3y + 12 = 0$
$18x + 6y + 24 = 0$

Q12. Given below are three equations. Two of them have infinite solutions and two have no solutions. State the two pairs.

$2x - 3y = 4$, $4x - 6y = 7$, $6x - 9y = 12$.

Q13. Solve the following system of linear equations:-

$3x - 2y - 1 = 0$; $2x - 3y + 6 = 0$

a) Graphically. Also find the area of triangle formed by these lines and x-axis.

b) By Substitution Method

c) By elemination Method.

d) By cross multiplication method. {Ans: $x = 3, y = 4$}

Q14. The larger of two supplementary angles exceeds the smaller by 18 degrees. Find them. {Ans: 99° and 81°}

Q15. For what value of k, the following system of equations has (i) unique solution ii) no solution.

$2x + ky = 1$; $3x - 5y = 7$ {Ans i) $k \neq -10/3$
ii) $k \neq -5/7$
$k = -10/3$

Q16. Solve the following pairs of equations by reducing them to a pair of linear equations:

(i) $\frac{5}{x} + \frac{1}{y} = 2$; $\frac{6}{x} - \frac{3}{y} = 1$ {Ans: $x = 3, y = 3$}

ii) $\frac{5}{x-1} + \frac{1}{y-2} = 2$; $\frac{6}{x-1} - \frac{3}{y-2} = 1$ {Ans: $x = 4, y = 5$}

(iii) $\frac{8}{2x+y} + \frac{5}{x+2y} = 3$; $\frac{12}{2x+y} - \frac{5}{x+2y} = 2$ {Ans: $x = 1, y = 2$