POLYNOMIALS

ASSIGNMENT-1

1. Is 2- $\sqrt{3}x + 5x^2$ a polynomial or not?
2. Find quadratic polynomials if zeroes are given as following
   (i) $3 + \sqrt{2}$ and $3 - \sqrt{2}$ (ii) $3 + \sqrt{5}$ and $3 - \sqrt{5}$ (iii) $\frac{2}{3}$ and $-\frac{1}{3}$
3. Write the zeros of the polynomial $x^2 + 5x + 6$.

4. If α and β are the zeros of $x^2 + 5x + 12$, then what is the value of $\alpha\beta$?

5. Find the quadratic polynomial, whose zeros are $\frac{5}{3}$ and $\frac{-3}{2}$?

6. If the sum of the zeros of the polynomial $f(x) = 2x^3 - kx^2 + 4x - 5$ is 6, then what is

   the value of K?

7. Find the quadratic equation if one zeroes is $(2+\sqrt{5})$ and sum of zeroes is 4

8. Can x-1 be the remainder of division of a polynomial p(x) by x + 3?

9. What is the sum of the zeros of the polynomial $4x^2 - 6x + 12$?

10. If one zero of the zeros of quadratic polynomial $P(x) = x^2 + 4kx - 25$ is negative of the

    other, find the value of K.

11. If α and β are the zeros of the polynomial $f(x) = ax^2 + bx + c$, then find $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$.

12. If 1 is the zero of the quadratic polynomial $x^2 + kx - 5$, then find the value of k.

13. If one root of the polynomial $f(x) = x^2 + 5x + k$ is reciprocal of the other, find the value

    of K.

14. Find the zeros of the linear polynomial y= 2x − 7 graphocally.

15. If α, β are the zeros of $f(x) = px^2 - 2x + 3p$ and $\alpha + \beta = \alpha\beta$, then find the value of p.

16. What mist be subtracted from the polynomial $8x^4 + 14x^3 + x^2 + 7x + 8$, so that the

    resulting polynomial is exactly divisible by $4x^2 - 3x + 2$?

17. If (x + b) is a factor of the $2x^2 + 2bx + 5x + 10$, find the b.

18. If the product of zeros of the polynomial $ax^2 - 6x - 6$ is 4 , find the value of a.

19. If $\alpha \ and \ \beta$ are the zeros of the quadratic polynomial p(x) $= x^2 - 5x - 1$, find the value

    of $\quad \frac{\alpha^2}{\beta^2} + \frac{\beta^2}{\alpha^2} + 2\left[\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right] - \alpha\beta$

20. If a   and b are the zeros of the polynomial $x^2 - 5x + 6$, find a polynomial whose zeros

    are 2a − 1 and 2b − 1.

21. Divide the polynomial $2x^2 + 3x + 1$ by the polynomial x + 2 and verify the division

    algorithm.

22. If a and b are the zeros of the quadratic polynomial f(x) $= 2x^2 - 5x + 7$, find the

    polynomial whose zeros are 2a + 2b and 2a + 2b.

23. Check whether the polynomial g(x) $= x^2 - 2$ is a factor of the polynomial f(x) =

    $x^4 + x^3 + x^2 - 2x - 3$ by applying division algorithm.

24. If a and b are the zeros of the quadratic polynomial f(x) $= x^2 - p(x + 1) - q$, show that

    (a + 1)(b + 1) = 1 − q .

25. If (x-2) is a factor of $x^3 + ax^2 + bx + 16 \ and \ b = 4a$ find the values of a   and b.

26. If the zeros of the quadratic polynomial $x^2(a + 1)x + b$ are 2 and -3, then find a and

    b.

27. Check whether the polynomial $x^2 - 3$ is a factor of the polynomial $2x^4 + 3x^3 - 2x^2 - 9x - 12$, by dividing the second polynomial by the first polynomial.

28. Find the zeros of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if you know that two of its zeros are $\sqrt{2}$ and $-\sqrt{2}$.

29. Find all the zeros of the polynomial $f(x) = 2x^4 - 3x^3 - 5x^2 + 9x - 3$, it being given that two of its zeros are $\sqrt{3}$ and $-\sqrt{3}$.

30. If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder comes out to be $x + a$, find k and a.

31. If $\sqrt{2}$ is a zero of the cubic polynomial $6x^3 + \sqrt{2}x^2 - 10x - 4\sqrt{2}$, then find its other two zeros.

32. If $x - \sqrt{5}$ is a factor of the cubic polynomial $x^3 - 3\sqrt{5}x^2 + 13x - 3\sqrt{5}$, then find all the zeros of the polynomial....

ASSIGNMENT-2

1. Look at the graph in the given fig. Each is the graph of $y = p(x)$, where $p(x)$ is a polynomial. For each of the graphs, find the numbers of zeroes of $p(x)$.
2. Find the zeroes of the quadratic polynomial $x^2 + 7x + 10$, and verify the relationship between the zeroes and the coefficient.
3. Find the zeroes of the polynomial $x^2 - 3$ and verify the relationship between the zeroes and the coefficients.
4. Find the quadratic polynomial, the sum and product of whose zeroes are -3 and 2, respectively.
5. Verify that 3, -1 and $-\frac{1}{3}$ are zeroes of the cubic polynomial $p(x) = 3x^2 - 5x^2 - 11x - 3$, and then verify the relationship between the zeroes and the coefficients.
6. Divide $2x^2 + 3x + 1$ by $x + 2$.

7. Divide $3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$, and verify the division algorithm.
8. Find all zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if you know that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.