INTERNATIONAL INDIAN SCHOOL, RIYADH

CLASS: X **TOPIC: POLYNOMIALS**

SUBJECT: MATHEMATICS

---

1. Show that $x^2 - 3$ is a factor of $2x^4 + 3x^3 - 2x^2 - 9x - 12$
2. Divide: $4x^3 + 2x^2 + 5x - 6$ by $2x^2 + 3x + 1$ (2x-2, 9x-4)
3. Divide $(6 + 19x + x^2 - 6x^3)$ by $(2 + 5x - 3x^2)$ and verify the division algorithm
4. Find other zeroes of the polynomial $p(x) = 2x^4 + 7x^3 - 19x^2 - 14x + 30$ if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$ (3/2, -5)
5. Find all the zeroes of the polynomial $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{5/3}$ and $-\sqrt{5/3}$ (-1,-1)
6. Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if it is known that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$ (1, ½)
7. Find all the zeroes of $2x^4 - 9x^3 + 5x^2 + 3x - 1$, if two of its zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$ (1, -1/2)
8. Find all the zeroes of polynomial $4x^4 - 20x^3 + 23x^2 + 5x - 6$ if two of its zeroes are 2 and 3 (1/2, -1/2)
9. When a polynomial f(x) is divided by $x^2 - 5$ the quotient is $x^2 - 2x - 3$ and remainder is zero. Find the polynomial and all its zeroes (3, -1, $\sqrt{5}$, $-\sqrt{5}$)
10. If the polynomial $f(x) = x^4 - 6x^3 + 16x^2 - 25x + 10$, is divided by another polynomial $x^2 - 2x + k$ the remainder Comes out to be $x + a$, Find k and a (k = 5, a = -5)
11. If the polynomial $6x^4 + 8x^3 - 5x^2 + ax + b$ is exactly divisible by the polynomial $2x^2 - 5$, then find the values of a and b (-20, -25)
12. Find the values of m and n so that $x^4 + mx^3 + nx^2 - 3x + n$ is divisible by $x^2 - 1$
13. On dividing $x^3 - 3x^2 + x + 2$ by a polynomial g(x), the quotient and remainder were $x - 2$ and $-2x + 4$, respectively. Find g(x) ($x^2 - x + 1$)
14. What must be subtracted from $2x^4 - 11x^3 + 29x^2 - 40x + 29$, so that the resulting polynomial is exactly divisible By $x^2 - 3x + 4$ (-2x + 5)
15. Find the polynomial, whose zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$ ($x^2 - 4x +$)
16. Form a quadratic polynomial, one of whose zero is $2 + \sqrt{5}$ and the sum of zeroes is 4 ($x^2 - 4x - 1$)
17. If α and β are zeroes of the polynomial $x^2 - 2x - 15$, then form a quadratic polynomial whose zeroes are 2α and 2β
18. Write a quadratic polynomial, the sum and product of whose zeroes are 3 and -2 ($x^2 - 3x - 2$)
19. Find the zeroes of the polynomial and verify the relationship between the zeroes and the coefficient
    a) $4x^2 - 4x + 1$ b) $x^2 - 3$ c) $4x^2 - 7$ d) $\sqrt{3}x^2 - 8x + 4\sqrt{3}$
20. If α and β are the zeroes of the polynomial $2y^2 + 7y + 5$, write the value of $\alpha + \beta + \alpha\beta$ (-1)
21. If one root of the polynomial $5x^3 + 13x + k$ is reciprocal of the other, then find the value of k?
22. If one zero of the polynomial $(a^2 + 9)x^2 + 13x + 6a$ is reciprocal of the other. Find the value of a (3)
23. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are $a - b$, a, $a + b$, find a and b (1, $\pm\sqrt{2}$)
24. If α and β are the zeroes of the polynomial $f(x) = 6x^2 + x - 2$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$ (5/6)
25. If α and β are the zeroes of the quadratic polynomial $2x^2 + 3x - 5$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ (3/5)
26. If α and β are the zeroes of the polynomial $f(x) = x^2 - 8x + k$ such that $\alpha^2 + \beta^2 = 40$, find k (12)
27. If α, β are the zeroes of a polynomial, such that $\alpha + \beta = 6$ and $\alpha\beta = 4$, then writes the polynomial
28. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of a (-3/2)
29. If α, β are the zeroes of quadratic polynomial $2x^2 + 5x + k$, find the value of k such that $(\alpha + \beta)^2 - \alpha\beta = 24$ (- 71/2)
30. If α and β are zeroes of $x^2 + 5x + 5$, find the value of $\alpha^{-1} + \beta^{-1}$ (-1)
31. α, β are the zeroes of the quadratic polynomial $x^2 - (k+6)x + 2(2k - 1)$. Find the value of k if $\alpha + \beta = ½\,\alpha\beta$ (7)
32. if α, β are the zeroes of the quadratic polynomial $x^2 - 7x + 10$, find the value of $\alpha^3 + \beta^3$ (133)
33. m, n are zeroes of $ax^2 - 12x + c$. Find the value of a and c if $m + n = mn = 3$ (12)
34. If α and β are the zeroes of $x^2 - 8x + k$, such that $\alpha^2 + \beta^2 = 40$, find k (12)
35. Find the sum and the product of the zeroes of cubic polynomial $2x^3 - 5x^2 - 14x + 8$ (5/2, -7, -4)
36. Find the sum and product of the zeroes of quadratic polynomial $x^2 - 3$
37. If 1 is a zero of polynomial $ax^2 - 3(a-1) - 1$, then find the value of a (1)

PREPARED BY: MAHABOOB PASHA