CBSE

POLYNOMIALS WS 3

Class 10 - Mathematics

1. Find the zeroes of the quadratic polynomial $8x^2 + 3x - 5$ and verify the relationship between the zeroes and the coefficients. **[2]**
2. If 1 is a zero of the polynomial $p(x) = ax^2 - 3(a - 1)x - 1$, then find the value of a. **[2]**
3. Find the zeroes of the polynomial $4x^2 + 17x - 15$ and verify the relationship between the zeroes and the coefficients. **[2]**
4. Find the zeroes of the quadratic polynomial $x^2 + 5x + 6$ and verify the relationship between the zeroes and the coefficients. **[2]**
5. If α and β are the zeroes of the polynomial $f(x) = 5x^2 - 7x + 1$, then find the value of $\left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)$. **[2]**
6. If the sum of the zeroes of the quadratic polynomial $ky^2 + 2y - 3k$ is equal to twice their product, find the value of k. **[2]**
7. Find a quadratic polynomial, the sum and product of whose zeroes are -3 and 2 respectively. **[2]**
8. α and $\frac{1}{\alpha}$ are zeroes of polynomial $4x^2 - 2x + (k - 4)$. Find the value of k. **[2]**
9. Find a quadratic polynomial whose sum and product of the zeroes are $-\frac{8}{3}, \frac{4}{3}$ respectively. **[2]**
10. Find a quadratic polynomial, the sum and product of whose zeroes are $\sqrt{2}$ and $-\frac{3}{2}$ respectively. Also, find its zeroes. **[2]**
11. Find a quadratic polynomial of the given number as the sum and product of its zeroes respectively. $\frac{1}{3}, -1$ **[2]**
12. Find a quadratic polynomial, the sum and product of whose zeroes are 0 and $\sqrt{5}$ **,** respectively. **[2]**
13. α, β are zeroes of the polynomial $x^2 - 6x + a$. Find the value of a, if $3\alpha + 2\beta = 20$. **[2]**
14. Find the zeros of $2\sqrt{3}x^2 - 5x + \sqrt{3}$ and verify the relationship between the zeros and the coefficients. **[2]**
15. Find the zeroes of the quadratic polynomial $p(x) = 25x^2 + 5x$ and verify the relationship between the zeroes and their coefficients. **[2]**
16. Find the zeroes of the polynomial $p(x) = 3x^2 + 5x - 28$ and verify the relationship between its coefficients and zeroes. **[2]**
17. A teacher after teaching the chapter polynomial in class 10th wrote the sum and product of zeros respectively on the blackboard to test the skill grasped by his students. Find out the Polynomials that the teacher have in his mind. **[2]**

    i. 0 and $\sqrt{2}$

    ii. $2 + \sqrt{3}$ and $2 - \sqrt{3}$

    iii. $2\sqrt{5}$ and $-\sqrt{5}$

    iv. $\frac{3}{2}$ and $-\frac{1}{2}$
18. Find the zeroes of quadratic polynomial $6x^2 - 3 - 7x$ and verify the relationship between the zeroes and their coefficients. **[2]**
19. If α and β are the zeros of the polynomial $f(x) = x^2 - 5x + k$ such that $\alpha - \beta = 1$, find the value of k. **[2]**

20. If α and β are the zeroes of the polynomial $4x^2$ - 2x + (k - 4) and $\alpha = \frac{1}{\beta}$, find the value of k. **[2]**

21. If α and β are the zeros of the quadratic polynomial p(x) = $4x^2$ - 5x - 1, find the value of $\alpha^2\beta + \alpha\beta^2$. **[2]**

22. If α, β are the zeroes of a polynomial, such that $\alpha + \beta$ = 10 and $\alpha\beta$ = 6, then write the polynomial. **[2]**

23. If x = $\frac{2}{3}$ and -3 are the roots of the quadratic equation ax^2 + 7x + b = 0. then the values of a and b. **[2]**

24. Find the zeros of the polynomial f(x) = x^2 - 2 and verify the relationship between its zeros and coefficients. **[2]**

25. Write a quadratic polynomial, sum of whose zeros is $2\sqrt{3}$ and their product is 2. **[2]**

26. Find a quadratic polynomial, the sum of whose zeroes is 0 and one zero is 5. **[2]**

27. Find the zeroes of the quadratic polynomial x^2 + 7x + 10, and verify the relationship between the zeroes and the coefficients. **[2]**

28. Find the zeros of f(x) = $x^2 - (\sqrt{3} + 1)x + \sqrt{3}$ and verify the relationship between the zeros and its coefficients. **[2]**

29. Find the zeros of the polynomial x^2 + $\frac{1}{6}$x - 2, and verify the relation between the coefficients and zeros of the polynomial. **[2]**

30. Find zeroes of a polynomial $6x^2$-18x + 12 and verify the relationship between zeroes and coefficients of variables in the polynomial. **[2]**

31. If α and β are the zeros of the polynomial f(x) = x^2 + x - 2, find the value of $\left(\frac{1}{\alpha} - \frac{1}{\beta}\right)$. **[2]**

32. If α and β are the zeroes of the polynomial x^2 + 6x + 9, then form a polynomial whose zeroes are -α and -β. **[2]**

33. Find the zeroes of x^2 - 2x - 8 and verify the relationship between the zeros and the coefficients. **[2]**

34. Find the zeros of g(s) = $4s^2$ - 4s + 1 and verify the relationship between the zeros and its coefficients. **[2]**

35. If α, β are zeroes of the quadratic polynomial x^2 - 5x + 6, form another quadratic polynomial whose zeroes are $\frac{1}{\alpha}, \frac{1}{\beta}$. **[2]**

36. Find the value of k such that the polynomial x^2 - (k + 6)x + 2(2k - 1) has sum of its zeros equal to half of their product. **[2]**

37. If α and β are the zeroes of the quadratic polynomial x^2 - 5x + 6, find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - 2\alpha\beta$. **[2]**

38. If $\frac{2}{3}$ and -3 are the zeroes of the polynomial ax^2 + 7x + b, then find the values of a and b. **[2]**

39. Find the zeroes of quadratic polynomial $4s^2$ - 4s + 1 and verify the relationship between the zeroes and their coefficients. **[2]**

40. Find a quadratic polynomial whose one zero is 7 and sum of zeroes is -18. **[2]**

41. Find the zeroes of the polynomial p(x) = $2x^2$ - 7x - 15 and verify the relationship between its coefficients and zeroes. **[2]**

42. Find a quadratic polynomial whose one zero is 5 and product of zeroes is 30. **[2]**

43. Form a quadratic polynomial, one of whose zero is $\sqrt{5}$ and the product of the zeroes is - $2\sqrt{5}$. **[2]**

44. Find the zeros of the polynomial $2x^2$ + 5x -12 and verify the relationship between its zeros and coefficients. **[2]**

45. Find the zeroes of $100x^2$ - 81 and verify the relationship between the zeroes and their coefficients. **[2]**

46. Find the zeroes of the polynomial $x^2 + \frac{1}{6}x - 2$ and verify the relation between the coefficients and the zeroes of the polynomial. **[2]**

47. Find the zeroes of the polynomial $3x^2$ + 4x – 4 by factorisation method and verify the relation between the zero and the coefficient of the polynomial. **[2]**

48. If one zero of the quadratic polynomial $2x^2$ + px + 4 is 2, find the other zero. Also, find the value of p. **[2]**

49. Find the quadratic polynomial, the sum and product of whose zeroes are -3 and 2 respectively. Hence find the zeroes. **[2]**

50. Find the zeroes of the polynomial $5t^2 + 12t + 7$ by factorization method and verify the relation between the zero and the coefficient of the polynomial. **[2]**

51. If α and β are the zeros of the quadratic polynomial $f(x) = x^2 - p(x + 1) - c$, show that $(\alpha + 1)(\beta + 1) = 1 - c$. **[2]**

52. If α and β are the zeros of the quadratic polynomial $f(x) = ax^2 + bx + c$, then evaluate: $\alpha^2\beta + \alpha\beta^2$ **[2]**

53. Find the zeros of $h(t) = t^2 - 15$ and verify the relationship between the zeros and its coefficients. **[2]**

54. Show that the polynomial $f(x) = x^4 + 4x^2 + 6$ has no real zero. **[2]**

55. If 2 and 3 are zeroes of polynomial $3x^2 - 2kx + 2m$, find the values of k and m. **[2]**

56. If α and β are the zeros of the quadratic polynomial $f(x) = ax^2 + bx + c$, then evaluate: $\frac{1}{\alpha} - \frac{1}{\beta}$. **[2]**

57. If α and β are the zeros of the quadratic polynomial $f(x) = x^2 - px + q$, prove that $\frac{\alpha^2}{\beta^2} + \frac{\beta^2}{\alpha^2} = \frac{p^4}{q^2} - \frac{4p^2}{q} + 2$. **[2]**

58. Find the zeroes of the polynomial $x^2 - 11x + 18$ and verify the relationship between the zeroes and the coefficients. **[2]**

59. If α and β are the zeroes of a polynomial $x^2 - 4\sqrt{3}x + 3$, then find the value of $\alpha + \beta - \alpha\beta$ **[2]**

60. Find the zeroes of the quadratic polynomial $x^2 + 6x + 8$ and verify the relationship between the zeroes and the coefficients. **[2]**

61. If α, β are the zeros of a polynomial such that $\alpha + \beta = -6$ and $\alpha\beta = -4$, then write the polynomial. **[2]**

62. Find the zeros of $f(x) = 6x^2 - 3 - 7x$ and verify the relationship between the zeros and its coefficients. **[2]**

63. Find the zeroes of the polynomial $x^2 – 3$ and verify the relationship between the zeroes and the coefficients. **[2]**

64. A teacher after teaching the chapter polynomial in class 10th, wrote the sum and product of zeroes respectively on the blackboard to test the skill grasped by his students. Find out the polynomials that the teacher has in his mind. **[2]**

    i. 2 and $\sqrt{2}$

    ii. $2 - \sqrt{2}$ and $2 - \sqrt{7}$

    iii. $\sqrt{3}$ and $-\sqrt{5}$

    iv. $\frac{2}{3}$ and $-\frac{1}{2}$

65. For what value of k, is -2 a zero of the polynomial $3x^2 + 4x + 2k$? **[2]**

66. If α and β are the zeroes of the polynomial $f(x) = x^2 - 4x - 5$, then find the value of $\alpha^2 + \beta^2$ **[2]**

67. Find the zeroes of the polynomial $4x^2 – 3x – 1$ by factorisation method and verify the relation between the zero and the coefficient of the polynomial. **[2]**

68. Find the zeroes of $4x^2 + 24x + 36$ and verify the relationship between the zeroes and their coefficients. **[2]**

69. If α, β are the zeros of the polynomial $2y^2 + 7y + 5$, write the value of $\alpha + \beta + \alpha\beta$. **[2]**

70. If α, β are zeroes of polynomial $p(x) = 5x^2 + 5x + 1$ then find the value of $\alpha^2 + \beta^2$. **[2]**

71. If α and β are the zeroes of the polynomial $f(x) = x^2 - 6x + k$, find the value of k such that $\alpha^2 + \beta^2 = 40$ **[2]**

72. α, β are zeroes of the quadratic polynomial $x^2 - (k + 6)x + 2(2k - 1)$. Find the value of k if $\alpha + \beta = \frac{1}{2}\alpha\beta$. **[2]**

73. If α, β are zeroes of quadratic polynomial $2x^2 + 5x + k$, find the value of k such that $(\alpha + \beta)^2 - \alpha\beta = 24$. **[2]**

74. Find a quadratic polynomial whose zeroes are -9 and $-\frac{1}{9}$. **[2]**

75. If α and β are the zeros of the quadratic polynomial $f(t) = t^2 - 4t + 3$, find the value of $\alpha^4\beta^3 + \alpha^3\beta^4$. **[2]**