CBSE

QUADRATIC EQUATIONS WS 4

Class 10 - Mathematics

1. Find the roots of the quadratic equation by the factorization method: $3\sqrt{2}x^2 - 5x - \sqrt{2} = 0$ **[2]**
2. Find the roots of the quadratic equation x^2 - 3x - 10 = 0 by factorization. **[2]**
3. Solve the quadratic equation by factorization: **[2]**

   $ax^2 + (4a^2 - 3b)x - 12ab = 0$
4. Find the roots of the quadratic equation $6x^2 - x - 2 = 0$. **[2]**
5. Solve for x : **[2]**

   $\frac{x+1}{x-1} + \frac{x-2}{x+2} = 4 - \frac{2x+3}{x-2}; x \neq 1, -2, 2$
6. Solve the quadratic equation by factorization: **[2]**

   $16x - \frac{10}{x} = 27$
7. Solve: $3\sqrt{7}x^2 + 4x - \sqrt{7} = 0$ **[2]**
8. Solve the quadratic equation for x: 6 - x - x^2 = 0 **[2]**
9. Ram takes 6 days less than Bhagat to finish a piece of work. If both of them together can finish the work in 4 days, in how many days Bhagat alone can finish the work ? **[2]**
10. Solve the quadratic equation by factorization: **[2]**

    $x^2 + \left(a + \frac{1}{a}\right)x + 1 = 0$
11. Solve the quadratic equation by factorization: **[2]**

    $abx^2 + (b^2 - ac)\,x - bc = 0$.
12. Solve quadratic equation by factorization method: **[2]**

    $4x^2 - 4ax + (a^2 - b^2) = 0$
13. Solve the quadratic equation $x^2 + 3x - 9 = 0$ for x. **[2]**
14. Solve: $100x^2 - 20x + 1 = 0$ **[2]**
15. The area of a right-angled triangle is 96 sq metres. If the base is three times the altitude, find the base. **[2]**
16. Solve the given quadratic equation by factorization $y^2 - 3 = 0$ **[2]**
17. Solve the quadratic equation by factorization **[2]**

    $x^2 - (\sqrt{3} + 1)x + \sqrt{3} = 0$.
18. Solve the equation: $3x^2 - 8x - 1 = 0$ for x. **[2]**
19. Find the roots of the following quadratic equation: $\frac{2}{5}x^2 - x - \frac{3}{5} = 0$. **[2]**
20. Determine the set of values of k for which the given quadratic equation has real roots: **[2]**

    $2x^2 + 3x + k = 0$
21. Solve the quadratic equation by factorization: **[2]**

    $4x^2 + 4bx - (a^2 - b^2) = 0$
22. Solve: $\sqrt{3}x^2 + 11x + 6\sqrt{3} = 0$ **[2]**
23. Find the values of k for which the given quadratic equation has real and distinct roots: $kx^2 + 6x + 1 = 0$ **[2]**

24. Solve the quadratic equation by factorization: **[2]**

$\frac{m}{n}x^2 + \frac{n}{m} = 1 - 2x$

25. Solve the quadratic equation by factorization method: **[2]**

$a^2b^2x^2 + b^2x - a^2x - 1 = 0$

26. Determine two consecutive multiples of 3 whose product is 270. **[2]**

27. Find the roots of the quadratic equation $100x^2 - 20x + 1 = 0$ by factorization. **[2]**

28. Solve: $3x^2 + 5\sqrt{5}x - 10 = 0$ **[2]**

29. Solve equation $\frac{2}{x^2} - \frac{5}{x} + 2 = 0$ by factorisation method. **[2]**

30. Solve the following problem: $x^2 - 45x + 324 = 0$ **[2]**

31. The hypotenuse of a right-angled triangle is 1 metre less than twice the shortest side. If the third side is 1 metre more than the shortest side, find the sides of the triangle. **[2]**

32. Solve for x: $\frac{5}{2}x^2 + \frac{2}{5} = 1 - 2x$ **[2]**

33. Find the value of k for which the given value is a solution of the given equation $7x^2 + kx - 3 = 0$; $x = \frac{2}{3}$ **[2]**

34. Find the value of k for which the given value is a solution of the given equation $kx^2 + \sqrt{2}x - 4 = 0$; $x = \sqrt{2}$ **[2]**

35. The height of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, form the quadratic equation to find the base of the triangle. **[2]**

36. Solve the quadratic equation by factorization: **[2]**

$\frac{a}{x-b} + \frac{b}{x-a} = 2, x \neq a, b.$

37. Solve the quadratic equation by factorization: **[2]**

$3x^2 - 14x - 5 = 0$

38. Solve for x: $\frac{1}{x+4} - \frac{1}{x+7} = \frac{11}{30}$, x # -4, 7 **[2]**

39. Find the whole number which when decreased by 20 is equal to 69 times the reciprocal of the number. **[2]**

40. Solve quadratic equation by factorization method: **[2]**

$x^2 - 4ax + 4a^2 - b^2 = 0$

41. Find the roots of the quadratic equation $15x^2 - 10\sqrt{6}x + 10 = 0$. **[2]**

42. Solve the quadratic equation by factorization: **[2]**

$\frac{1}{x} - \frac{1}{x-2} = 3, x \neq 0, 2$

43. Find the roots of $6x^2 - \sqrt{2}x - 2 = 0$ by the factorisation of the corresponding quadratic polynomial. **[2]**

44. Find a natural number whose square diminished by 84 is equal to thrice of 8 more than the given number. **[2]**

45. Determine whether the given quadratic equations have real roots and if so, find the roots **[2]**

$2x^2 - 2\sqrt{2}x + 1 = 0$

46. Find the roots of the following Quadratic Equation by factorization: $2x^2 + x - 6 = 0$ **[2]**

47. Find two natural numbers which differ by 3 and whose squares have the sum 117. **[2]**

48. Solve: $\sqrt{7}x^2 - 6x - 13\sqrt{7} = 0$ **[2]**

49. The sum of a number and its reciprocal is $2\frac{1}{30}$. Find the number. **[2]**

50. The sum of the squares of two consecutive natural numbers is 421. Find the numbers. **[2]**

51. Solve: $x^2 + 3\sqrt{3}x - 30 = 0$. **[2]**

52. Solve: $2x^2 - x + \frac{1}{8} = 0$ **[2]**

53. A two-digit number is such that the product of the digits is 16. When 54 is subtracted from the number, the digits are interchanged. Find the number. **[2]**

54. Find the value of k for which the given value is a solution of the given equation $x^2 - x(a+b) + k = 0$; x= a **[2]**

55. Solve: $5^{(x+1)} + 5^{(2 - x)} = 5^3 + 1$. **[2]**

56. Solve the quadratic equation by factorization: **[2]**

$\frac{16}{x} - 1 = \frac{15}{x+1}, x \neq 0, -1$

57. Solve the quadratic equation by factorization: **[2]**

$5x^2 - 3x - 2 = 0$

58. Solve for y: $y^2 + \frac{3\sqrt{5}}{2}y - 5 = 0$ **[2]**

59. Find the roots of quadratic equation by the factorisation method: $2x^2 + \frac{5}{3}x - 2 = 0$ **[2]**

60. Solve the equation $2x^2 - ax - a^2 = 0, a \in R$ by factorization. **[2]**

61. Solve the quadratic equation by factorization: **[2]**

$x^2 - (1 + \sqrt{2})\, x + \sqrt{2} = 0$

62. Find the roots of equation: $\frac{1}{x} - \frac{1}{(x-2)} = 3, x \neq 0, 2$ **[2]**

63. Two numbers differ by 4 and their product is 192. Find the numbers. **[2]**

64. Solve: $3x^2 - 2\sqrt{6}x + 2 = 0$ **[2]**

65. The difference of two natural numbers is 3 and the difference of their reciprocals is $\frac{3}{28}$. Find the numbers. **[2]**

66. Solve the quadratic equation by factorization: **[2]**

$a^2x^2 - 3abx + 2b^2 = 0$

67. Find the values of p for which the quadratic equation $2x^2 + px + 8 = 0$ has real roots. **[2]**

68. The sum of squares of two consecutive natural number is 313. Find the numbers. **[2]**

69. Write the value of k for which the quadratic equation $x^2 - kx + 4 = 0$ has equal roots. **[2]**

70. The sum of two numbers is 15. If the sum of their reciprocals is $\frac{3}{10}$, find the two numbers. **[2]**

71. Solve the quadratic equation by factorization: **[2]**

$48x^2 - 13x - 1 = 0$

72. Find the roots of the quadratic equation $2x^2 - x + \frac{1}{8} = 0$ by factorization. **[2]**

73. Solve the quadratic equation by factorization: **[2]**

$3x^2 - 2\sqrt{6}x + 2 = 0$

74. Solve the equation $x^2 - \frac{11}{4}x + \frac{15}{8} = 0$ by factorisation method. **[2]**

75. Sovle: $10x - \frac{1}{x} = 3$ **[2]**