MATHS

BOOKS - CHETANA MATHS (MARATHI ENGLISH)

Quadratic Equations

Example

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1. Which of the following is a quadratic equation? a)$3x^2 - 5x + 3 = 0$ b)2x+7y=8 c)x

=6 d)None of these

2. Which of the following is a quadratic equation? a)$9y^2 + 5 = 0$ b)$x + y = 9$ c)$x^3 = 8$ d)None of these

3. Which of the following is a quadratic equation? a)$m^3 - 5m^2 + 4 = 0$ b)$x + y = 4$

c)$x^2 + 8x = 7$ d)None of these

4. Which of the following is a quadratic equation? a)$(l + 2)(l - 5) = 0$ b)$x + 6y = 8$ c)$m^3 = 64$ d)None of these

5. Write any two quadratic equations.

6. Which of the following is a quadratic equation? a)$x^2 + 5x - 2 = 0$ b)$x = 8y$ c) $y^3 + x^3 = 0$ d)None of these

7. Which of the following is a quadratic equation? a)$y^2 = 5y - 10$ b)$3x - 7y = 9$ c) $5y^3 = x^3$ d)None of these

8. Which of the following is a quadratic equation? a)$y^2 + \dfrac{1}{y} = 2$ b)$y^2 = 3$ c) $x - 8y = 2$ d)None of these

9. Which of the following is a quadratic equation?   a)$x + \dfrac{1}{x} = -2$ b)$m = 5n$ c) $y^3 = 9$ d)None of these

10. Which of the following is a quadratic equation? a)$(m + 2)(m - 5) = 0$ b)$x^3 = 9$ c) $y + 3 = 7x$ d)None of these

11. Which of the following is a quadratic equation? a) $m^3 + 3m^2 - 2 = 0$ b)$x = 8$ c) $y^2 + 7y + 9 = 0$ d)None of these

12. Which of the following is a quadratic equation? a)$x^2 + 2x + 11 = 0$ b)$y^3 = 6y^2$ c) $x + 8y = 4$ d)None of these

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13. Which of the following is a quadratic equation? a)$x^2 - 9x + 5 = 0$ b)$y^3 = 6y^2 + 9$ c)$x + 2y = 6$ d)None of these

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14. Which of the following is a quadratic equation? a)$(x + 2)^2 = 2x^2$ b)$y^3 + y^2 = 7$ c) $x - 8y = 6$ d)None of these

15. Write the following equation in the form of $ax^2 + bx + c = 0$ stating values of a, b, c :

$2y = 10 - y^2$

16. Write the following equation in the form of $ax^2 + bx + c = 0$ stating values of a, b, c :

$(x - 1)^2 = 2x + 3.$

17. Write the following equation in the form of $ax^2 + bx + c = 0$ stating values of a, b, c :

$x^2 + 5x = -(3 - x)$

18. Write the following equation in the form of $ax^2 + bx + c = 0$ stating values of a, b, c :

$$3x^2 = 2x^2 - 9$$

19. Write the following equation in the form of $ax^2 + bx + c = 0$ stating values of a, b, c :

$$x(3 + 6x) = -5$$

20. Write the following equation in the form of $ax^2 + bx + c = 0$ stating values of a, b, c :

$x^2 - 9 = 13$.

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21. Determine whether $x = \dfrac{3}{2}$ is a root of the quadratic equation $2x^2 - 7x + 6 = 0$

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22. Determine whether $x = -2$ is a root of the quadratic equation $2x^2 - 7x + 6 = 0$

23. If x=5 is a root of the quadratic equation $kx^2 - 14x - 5 = 0$, then find the value of k

24. Determine whether $x = 1, x = -1$ are the roots of quadratic equation $x^2 + 4x - 5 = 0$

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25. Determine whether $m = 2$ is a root of the equation $2m^2 - 5m = 0$.

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26. Find k, if $x = 3$ is a root of equation

$kx^2 - 10x + 3 = 0$

27. One of the roots of equation

$5m^2 + 2m + k = 0$ is $-\dfrac{7}{5}$. Find value of k.

28. One of the roots of quadratic equation $2x^2 + kx - 2 = 0$ is -2. Find k.

29. Solve the following quadratic equation by factorization: $x^2 - 15x + 54 = 0$

30. Solve the following quadratic equation by factorization. $x^2 + x - 20 = 0$

31. Solve the following quadratic equation by factorization: $2y^2 + 27y + 13 = 0$

32. Solve the following quadratic equation by factorization: $5m^2 = 22m + 15$

33. Solve the following quadratic equation by factorization: $2x^2 - 2x + \dfrac{1}{2} = 0$

34. Solve the following quadratic equation by factorization: $6x - \dfrac{2}{x} = 1$

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35. Solve the quadratic equation by factorisation $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

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36. Solve the following quadratic equation by factorization: $x^2 + 2x + 1 = 0$

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37. Solve the following quadratic equation by factorization: $2m(m - 24) = 50$

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38. Solve the following quadratic equation by factorization: $25m^2 = 9$.

39. Solve the following quadratic equation by factorization: $m^2 - 11 = 0$.

40. Solve the following quadratic equation by factorization: $7m^2 = 21m$.

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41. Solve the following quadratic equation: $(2x + 3)^2 = 25$.

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42. Solve the following quadratic equation:

$$x^2 - \frac{3x}{10} - \frac{1}{10} = 0$$

43. Solve the following quadratic equation by completing the square method:

$$x^2 + x - 20 = 0$$

44. Solve the following quadratic equation by completing the square method:

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

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45. Solve the following quadratic equation by completing the square method:

$m^2 - 5m = -3$

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46. Solve the following quadratic equation by completing the square method:

$$9y^2 - 12y + 2 = 0$$

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47. Solve the following quadratic equation by completing the square method:

$$2y^2 + 9y + 10 = 0$$

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48. Solve the following quadratic equation by completing the square method: $5x^2 = 4x + 7$

49. Solve the equation $2x^2 + 13x + 15 = 0$ by factorization method.

50. Compare the given quadratic equation to the general form and write values of a, b, c:

$$x^2 - 7x + 5 = 0$$

51. Compare the given quadratic equation to the general form and write values of a, b, c:

$$2m^2 = 5m - 5$$

52. Compare the given quadratic equation to the general form and write values of a, b, c:

$y^2 = 7y.$

53. Find the roots of the given quadratic equation: $x^2 + 6x + 5 = 0$

54. Find the roots of the given quadratic equation: $x^2 - 3x - 2 = 0$

55. Find the roots of the given quadratic equation: $3m^2 + 2m - 7 = 0$

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56. Find the roots of the given quadratic equation: $5m^2 - 4m - 2 = 0$

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57. Find the roots of the given quadratic equation $y^2 + \dfrac{1}{3}y = 2$

58. Find the roots of the given quadratic equation: $5x^2 + 14x + 8 = 0$

59. Solve the following quadratic equation:

$$\frac{1}{x+5} = \frac{1}{x^2}$$

60. Solve the following quadratic equation:

$$m^2 + 5m + 5 = 0$$

61. Solve the following quadratic equation:

$$5m^2 + 2m + 1 = 0$$

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62. Solve the following quadratic equation:

$$x^2 - 4x + 3 = 0$$

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63. Solve the quadratic equation $x^2 + 2\sqrt{3}x + 3 = 0$ using formula method.

64. Determine the nature of roots of the quadratic equation: $2x^2 - 5x + 7 = 0$

65. Determine the nature of roots of the quadratic equation: $x^2 + 2x - 9 = 0$

66. Determine the nature of roots of the quadratic equation: $\sqrt{3}x^2 + 2\sqrt{3}x + \sqrt{3} = 0$

67. Find the value of discriminant for quadratic equation: $x^2 + 7x - 1 = 0$

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68. Find the value of discriminant for quadratic equation: $2y^2 - 5y + 10 = 0$

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69. Find the value of discriminant for the quadratic equation: $\sqrt{2}x^2 + 4x + 2\sqrt{2} = 0$

70. Find the value of discriminant for quadratic equation: $2y^2 - y + 2 = 0$

71. Find the value of discriminant for quadratic

equation: $5m^2 - m = 0$

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72. Find the value of discriminant for quadratic

equation: $\sqrt{2}x^2 - x - \sqrt{5} = 0$

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73. Determine the nature of roots of the following quadratic equation:

$$x^2 - 4x - 4 = 0$$

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74. Determine the nature of roots of the following quadratic equation:

$$2y^2 - 7y + 2 = 0$$

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75. Determine the nature of roots of the following quadratic equation:

$$m^2 + 2m + 9 = 0$$

76. Determine the nature of roots for the quadratic equation: $3x^2 - 5x + 7 = 0$

77. Determine the nature of roots for the quadratic equation: $\sqrt{3}x^2 + \sqrt{2}x - 2\sqrt{3} = 0$

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78. Determine the nature of roots for the quadratic equation: $m^2 - 2m + 1 = 0$

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79. The roots of the following quadratic equation are real and equal. Find k.

$$3y^2 + ky + 12 = 0$$

80. The roots of the following quadratic equation are real and equal. Find k.

$$kx(x - 2) + 6 = 0$$

81. Find m if $(m - 12)x^2 + 2(m - 12)x + 2 = 0$ has real and equal roots.

82. Fill in the blanks if α and β are roots of quadratic equation $10x^2 + 10x + 1 = 0$.

$\alpha + \beta$ =........ and $\alpha \cdot \beta$ =.........

83. Sum of the roots of quadratic equation $x^2 - 4kx + k + 3 = 0$ is double their product. Find k

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84. α, β are roots of $y^2 - 2y - 7 = 0$. Find $\alpha^2 + \beta^2$

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85. α, β are roots of $y^2 - 2y - 7 = 0$. Find $\alpha^3 + \beta^3$

86. Write the quadratic equation if addition of the roots is 10 and product is 9.

87. Write the quadratic equation if roots are:

$\alpha = 2, \beta = 5.$

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88. Write the quadratic equation if the roots

are 0 and 4.

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89. Write the quadratic equation if the roots are 3 and -10.

90. Write the quadratic equation if the roots are: $\dfrac{1}{2}$ and $-\dfrac{1}{2}$

91. Write the quadratic equation if the roots are: $2 - \sqrt{5}$ and $2 + \sqrt{5}$

92. Write the quadratic equation if the roots are: 10 and -10

93. Write the quadratic equation if the roots are: $1 - 3\sqrt{5}$ and $1 + 3\sqrt{5}$

94. Write the quadratic equation if the roots are: 0 and 7

95. The sum of two roots of a quadratic equation is 5 and sum of their cubes is 35. Find the equation.

96. Find quadratic equation such that its roots are square sum of the roots and square of difference of the roots of equation

$$2x^2 + 2(p + q)x + p^2 + q^2 = 0$$

97. Product of Pragati's age 2 years ago and 3 years hence is 84. Find her present age.

98. Vivek is older than Kishor by 5 years. The sum of the reciprocals of their ages is $\dfrac{1}{6}$. Find their present ages.

99. The sum of squares of two consecutive even natural numbers is 244. Find the numbers.

100. The difference between squares of two numbers is 120.The square of smaller number is twice the greater number. Find the numbers.

101. If 460 is divided by a natural number, quotient is 6 more than 5 times the divisor and remainder is 1. Find quotient and divisor.

102. Mukund possesses ₹50 more than what Sagar possesses. The product of the amount they have is ₹15,000. Find the amounts each one has.

103. Mr. Ram makes certain number of pots on daily basis. Production cost of each pot is ₹40 more than 10 times total number of pots he makes in one day. If production cost of all pots per day is ₹600, find production cost of one pot and number of pots he makes per day.

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104. Ranjana wants to distribute 540 oranges among some students. If 30 students were

more, each would get 3 oranges less. Find the number of students.

105. Yash scored 10 marks more in second test than that in first. 5 times the score of the second test is same as square of the score in first test. Find his score in first test.

106. Mr. Dinkar owns a farm at village Talvel. The length of the farm is 10 meters more than twice the breadth. He dug a square shaped pond inside the farm. The side of pond is $\frac{1}{3}$ times of the breadth of the farm. The area of the farm is 20 times the area of the pond. Find the dimensions of the farm and the pond.

107. Pintu takes 6 days more than Nishu to complete certain work. If they work together, they finish it in 4 days. How many days would it take to complete the work if they work alone?

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108. A tank fills completely in 2 hours if both the taps are open. If only one of the taps is open at a given time, the smaller tap takes 3

hours more than the larger one to fill the tank. How much time does each tap take to fill the tank completely?

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109. Pratik takes 8 hours to travel 36 km downstream and return to same spot. The speed of boat in still water is 12km/hr. Find the speed of the water current.

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110. In the orange garden of Mr.Madhusudan there are 150 orange trees. The number of trees in each row are 5 more than that in each column. Find the number of trees in each row and each column.

Exercise

1. Which one of the following is a quadratic equation? a) $\dfrac{5}{x} - 3 = x^2$ b) $x(x + 5) = 2$ c)

$n - 1 = 2n$ d)$\dfrac{1}{x^2}(x + 2) = x$

A. $\dfrac{5}{x} - 3 = x^2$

B. $x(x + 5) = 2$

C. $n - 1 = 2n$

D. $\dfrac{1}{x^2}(x + 2) = x$

Answer:

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2. Out of the following equations, which one is not a quadratic equation? a) $x^2 + 4x = 11 + x^2$ b)$x^2 = 4x$ c)$5x^2 = 90$ d) $2x - x^2 = x^2 + 5$

A. $x^2 + 4x = 11 + x^2$

B. $x^2 = 4x$

C. $5x^2 = 90$

D. $2x - x^2 = x^2 + 5$

Answer:

3. The roots of $x^2 + kx + k = 0$ are real and equal. Find K. a)0 b)4 c)0 or 4 d)2

A. 0

B. 4

C. 0 or 4

D. 2

Answer:

4. For quadratic equation $\sqrt{2}x^2 - 5x + \sqrt{2} = 0$, find the value of the discriminant.

A. -5

B. 17

C. $\sqrt{2}$

D. $2\sqrt{2} - 5$

Answer:

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5. Which of the following quadratic equations has roots 3, 5? a)$x^2 - 15x + 3 = 0$ b) $x^2 - 8x + 15 = 0$ c)$x^2 + 3x + 5 = 0$ d) $x^2 + 8x - 15 = 0$

A. $x^2 - 15x + 3 = 0$

B. $x^2 - 8x + 15 = 0$

C. $x^2 + 3x + 5 = 0$

D. $x^2 + 8x - 15 = 0$

Answer:

6. Out of the following equations, find the equation having the sum of its roots as -5. a) $3x^2 - 15x + 3 = 0$ b)$x^2 - 5x + 3 = 0$ c) $x^2 + 3x - 5 = 0$ d)$3x^2 + 15x + 3 = 0$

A. $3x^2 - 15x + 3 = 0$

B. $x^2 - 5x + 3 = 0$

C. $x^2 + 3x - 5 = 0$

D. $3x^2 + 15x + 3 = 0$

Answer:

7. $\sqrt{5}m^2 - \sqrt{5}m + \sqrt{5} = 0$, Which of the following statement is true for the given equation? a)Real and unequal roots b)Real and equal roots c)No real roots d)Three roots

    A. real and unequal roots

    B. real and equal roots

    C. no real roots

D. three roots

Answer:

8. One of the roots of equation $x^2 + mx - 5 = 0$ is 2. Find m. a)-2 b)$-\dfrac{1}{2}$ c)$\dfrac{1}{2}$ d)2

A. -2

B. $-\dfrac{1}{2}$

C. $\dfrac{1}{2}$

D. 2

Answer:

9. α, β are roots of quadratic equation $ax^2 + bx + c = 0$. Then $(\alpha + \beta)$=_____ a)$-\dfrac{b}{a}$ b)$\dfrac{b}{a}$ c)$-\dfrac{c}{a}$ d)$\dfrac{c}{a}$

A. $-\dfrac{b}{a}$

B. $\dfrac{b}{a}$

C. $-\dfrac{c}{a}$

D. $\dfrac{c}{a}$

Answer:

10. The roots of the quadratic equation $y^2 - 16y + 63 = 0$ are_____ a)$-9, -7$ b) $-9, 7$ c) $9, -7$ d) $9, 7$

A. -9 and -7

B. -9 and 7

C. 9 and -7

D. 9 and 7

Answer:

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11. If the roots of a quadratic equation are real and equal, then Δ must be_____ a) 0 b)Less than 0 c)Greater than 0 d)1

A. zero

B. greater then zero

C. less than zero

D. equal to one

Answer:

12. If one root of quadratic equation

$kx^2 - 7x + 12 = 0$ is 3, then value of k

is...........a)-1 b)1 c)3 d)None of these

A. -1

B. 1

C. 3

D. none of these

Answer:

13. If one root of quadratic equation is $1 - \sqrt{3}$ then the other root is..............a)$1 - \sqrt{3}$ b) $-1 - \sqrt{3}$ c)$1 + 2\sqrt{3}$ d)$1 + \sqrt{3}$

A. $1 - \sqrt{3}$

B. $-1 - \sqrt{3}$

C. $1 + 2\sqrt{3}$

D. $1 + \sqrt{3}$

Answer:

14. If the roots of $ax^2 + bx + c = 0$ are real and equal then.......a)$b^2 - 4ac < 0$ b) $b^2 - 4ac = 0$ c)$b^2 - 4ac > 0$ d) Cannot say

A. $b^2 - 4ac < 0$

B. $b^2 - 4ac = 0$

C. $b^2 - 4ac > 0$

D. cannot say

Answer:

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15. The value of discriminant of the equation

$x^2 + x + 1 = 0$ is................a)-4 b)-3 c)3 d)4

A. -4

B. -3

C. 3

D. 4

Answer:

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16. α, β are roots of quadratic equation such

that $\alpha + \beta = -4$ and $\alpha\beta = -1$, then

required equation is..........a)$x^2 - 4x - 1 = 0$ b)

$x^2 + 4x - 1 = 0$ c)$x^2 + 4x + 1 = 0$ d)

$x^2 - 4x + 1 = 0$

A. $x^2 - 4x - 1 = 0$

B. $x^2 + 4x - 1 = 0$

C. $x^2 + 4x + 1 = 0$

D. $x^2 - 4x + 1 = 0$

Answer:

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17. The standard form of quadratic equation

$$x - \frac{5}{x} = 3x - 7 \quad \text{is.........a)} 2x^2 - 8x + 7 = 0$$

b)$2x^2 + 7x + 5 = 0$ c)$2x^2 - 7x + 5 = 0$ d)

$$2x^2 - 5x + 7 = 0$$

A. $2x^2 - 8x + 7 = 0$

B. $2x^2 + 7x + 5 = 0$

C. $2x^2 - 7x + 5 = 0$

D. $2x^2 - 5x + 7 = 0$

Answer:

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18. What is the nature of roots of quadratic equation: $9x^2 - 12x + 4 = 0$? a)Real b)Equal c)Unequal d)Both a and b

A. real

B. equal

C. unequal

D. both A and B

Answer:

19. Three times the square of natural number is 363 is written in the mathematical equation form as..............a)$x^2 + 3 = 363$ b) $x^2 - 3x + 3 = 363$ c)$3x^2 = 363$ d)$\dfrac{x^2}{3} = 363$

A. `x^2+3=363

B. $x^2 - 3 = 363$

C. `3x^2=363

D. $\dfrac{x^2}{3} = 363$

Answer:

20. Which of the following is not a quadratic equation? a)$-\dfrac{5}{3}x^2 = 2x + 9$ b) $(x + 3)(x + 4) = 0$ c)$\dfrac{5}{x} - 3 = x^2$ d) $\dfrac{7}{m} = 3m + 5$

A. $-\dfrac{5}{3}x^2 = 2x + 9$

B. $(x + 3)(x + 4)$

C. $\dfrac{5}{x} - 3 = x^2$

D. $\dfrac{7}{m} = 3m + 5$

Answer:

21. For quadratic equation the product of the roots α and β=..............a)$-\dfrac{b}{a}$ b)$\dfrac{c}{a}$ c)$-\dfrac{c}{a}$ d)$\dfrac{b}{a}$

A. $-\dfrac{b}{a}$

B. $-\dfrac{c}{a}$

C. $\dfrac{b}{a}$

D. $\dfrac{c}{a}$

Answer:

22. Write the formula: $\alpha^3 + \beta^3 =$ ....a)

$(\alpha + \beta)^3 - 3\alpha\beta(\alpha + \beta)$ b)

$(\alpha - \beta)^3 + 3\alpha\beta(\alpha - \beta)$ c)

$(\alpha + \beta)^3 - 3\alpha\beta(\alpha - \beta)$ d)

$(\alpha - \beta)^3 - 3\alpha\beta(\alpha - \beta)$

A. $(\alpha + \beta)^3 - 3\alpha\beta(\alpha + \beta)$

B. $(\alpha - \beta)^3 + 3\alpha\beta(\alpha - \beta)$

C. $(\alpha + \beta)^3 - 3\alpha\beta(\alpha - \beta)$

D. $(\alpha - \beta)^3 - 3\alpha\beta(\alpha - \beta)$

Answer:

23. If one root of quadratic equation is $5 + \sqrt{5}$,then the product of roots is…………a) 30 b) 20 c) -20 d) 125

A. 30

B. -20

C. 20

D. 125

Answer:

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24. If x=9 is one root of the quadratic equation

$x^2 - 11x + k = 0$, then find the value of k.

▶

25. If one root of the quadratic equation $3y^2 - ky + 8 = 0$ is $\dfrac{2}{3}$, then find the value of k.

26. Determine whether the given values of x are the roots of given quadratic equation $6x^2 - x - 2 = 0, x = -\dfrac{1}{2}, x = 5$

27. Which of the following is a quadratic equation? a)$x - \dfrac{5}{x} = 3x - 9$ b)$x + 3 = 0$ c) $y^3 = 8$ d)None of these

28. Which of the following is a quadratic equation? a)$(x + 3)(x - 4) = 0$ b)$x = 9$ c) $x^3 = 0$ d)None of these

29. Which of the following is a quadratic equation? a)$\dfrac{5}{x} - 3 = x^2$ b)$x^2 = 9$ c) $x + 7 = 0$ d)None of these

30. Which of the following is a quadratic equation? a)$n^2 - n + 4 = n^2$ b)$x^2 = 8$ c) $y^3 = 0$ d)None of these

31. Which of the following is a quadratic equation?   a)$x - 3 = 4x^2$ b)$x + 9 = 0$ c) $x^3 + 2x^2 + 5 = 0$ d)None of these

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32. Write the quadratic equation $m(m - 7) = 0$ in $ax^2 + bx + c = 0$ form and find the values of a,b,c.

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33. Write the quadratic equation $\dfrac{x^2 - 7}{x} = 7$ in $ax^2 + bx + c = 0$ form and find the values of a,b,c.

34. Write the quadratic equation $x - \dfrac{6}{x} = 5$ in $ax^2 + bx + c = 0$ form and find the values of a,b,c.

35. Write the quadratic equation $(x + 5)(x - 11) = 0$ in $ax^2 + bx + c = 0$ form and find the values of a,b,c.

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36. Solve the given quadratic equation by factorization method: $x^2 - 5x - 36 = 0$

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37. Solve the given quadratic equation by factorization method: $3y^2 - 14y + 8 = 0$

38. Solve the given quadratic equation by factorization method: $64m^2 - 625 = 0$

39. Solve the given quadratic equation by factorization method: $x^2 - 13x + 30 = 0$

40. Solve the given quadratic equation by factorization method: $16x^2 - 24x = 0$

41. Solve the given quadratic equation by factorization method: $x^2 - 3\sqrt{3}x + 6 = 0$

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42. Solve the given quadratic equation by factorization method: $7x^2 + 4x - 20 = 0$

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43. Solve the given quadratic equation by factorization method: $m^2 - 7 = 0$

44. Solve the following quadratic equation by completing square method: $x^2 + 8x + 15 = 0$

45. Solve the following quadratic equation by completing square method:

$$m^2 - 2m - 1 = 0$$

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46. Solve the following quadratic equation by completing square method: $x^2 + 3x + 1 = 0$

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47. Solve the following quadratic equation by completing square method: $3y^2 + 7y + 1 = 0$

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48. Solve the following quadratic equation by completing square method: $4p^2 + 7 = 12p$

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49. Solve the following quadratic equation by completing square method: $6m^2 + m = 2$

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50. Solve the following quadratic equation by using formula method: $x^2 + 2x - 7 = 0$

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51. Solve the following quadratic equation by using formula method: $3x^2 + 8x + 3 = 0$

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52. Solve the following quadratic equation by using formula method: $5m^2 + 5m = 1$

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53. Solve the following quadratic equation by using formula method: $x^2 + 4x - 1 = 0$

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54. Solve the following quadratic equation by using formula method: $4x^2 + x + 5 = 0$

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55. Solve the following quadratic equation by using formula method: $9y^2 - 5y - 4 = 0$

56. Find the value of discriminant for the following quadratic equation: $x^2 + 4x + 4 = 0$

57. Find the value of discriminant for the following quadratic equation:

$$x^2 + 4x + 1 = 0$$

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58. Find the value of discriminant for the following quadratic equation:

$$3x^2 + 2x + 1 = 0$$

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59. Determine the nature of roots of the following quadratic equation from its discriminant: $x^2 - 8x + 16 = 0$

60. Determine the nature of roots of the following quadratic equation from its discriminant: $2x^2 - 3x - 4 = 0$

61. Determine the nature of roots of the following quadratic equation from its discriminant: $4x^2 - 8x + 9 = 0$

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62. Form the quadratic equation if its roots are 0 and -4

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63. Form the quadratic equation if its roots are $\dfrac{1}{2}$ and $-\dfrac{3}{4}$

64. Form the quadratic equation if its roots are $\left(\sqrt{2} + \sqrt{3}\right)$ and $\left(\sqrt{2} - \sqrt{3}\right)$

65. Find the value of k for which given quadratic equation has real and equal roots:

$$k^2x^2 - 2(k-1)x + 4 = 0$$

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66. Find the value of k for which given quadratic equation has real and equal roots:

$$4x^2 - 3kx + 1 = 0$$

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67. If α and β are the roots of equation $x^2 - 4x + 1 = 0$, find $\alpha^2 + \beta^2$

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68. If α and β are the roots of equation $x^2 - 4x + 1 = 0$, find $\alpha^3 + \beta^3$

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69. Find k, if one root of the equation $5x^2 + 6x + k = 0$ is five times the other root.

70. A man riding on a bicycle covers a distance of 60km in the direction of wind and comes back to his original position in 8 hours. If the speed of the wind is 10km/hr, find the speed of the bicycle.

71. One tank can be filled up by two taps in 6 hours. The smaller tap alone takes 5 hours more than the bigger tap alone. Find the time required by each tap to fill the tank separately.

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72. The sum of the squares of two consecutive natural numbers is 113. Find the numbers.

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73. The sum of the squares of two consecutive natural numbers is 41. Find the numbers.

74. For doing some work, Ganesh takes 10 days more than John. Together, they will complete the work in 12 days. Find the number of days to complete the work if Ganesh works alone.

75. In garden, there are some rows and columns. The number of trees in a row is greater than that in each column by 10. Find the number of trees in each row if the total number of trees are 200.

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76. The sum of reciprocals of Reshma's age (in years) 3years ago and 5 years after from now is 1/3. Find her present age.

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77. If α and β are the roots of quadratic equation $2x^2 + 4x + 3 = 0$, then the value of $\alpha + \beta = \ldots\ldots$

A. -2

B. 2

C. 34

D. -4

Answer:

78. Write the following quadratic equation in standard form: $(m + 4)(m - 10) = 0$

79. If sum of the roots of quadratic equation is 10 and the product is 9, then form the quadratic equation.

80. Find the values of a,b,c for the following quadratic equation by comparing with standard form: $x^2 - x - 3 = 0$

81. Solve by factorization method: $m^2 - 25 = 0$

82. If α and β are roots of quadratic equation, and $\alpha = -5$ and $\beta = 9$, then form the quadratic equation.

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83. Vivek is 5 years elder to Kishor. The sum of the reciprocal of their ages is 1/6. Find their present ages.

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84. Solve the following quadratic equation by formula method: $x^2 + 6x + 5 = 0$

85. If α and β are the roots of quadratic equation $x^2 + 5x - 1 = 0$ then, find $\alpha^3 + \beta^3$

86. If α and β are the roots of quadratic equation $x^2 + 5x - 1 = 0$ then, find $\alpha^2 + \beta^2$

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87. For doing some work, Pintu takes 6 days more than Nishu. If both work together, then they complete the work in 4 days. Find the number of days taken, if Pintu and Nishu work alone.

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88. Find m, if the roots of the quadratic equation $(m - 12)x^2 + 2(m - 12)x + 2 = 0$ are real and equal.

89. Pratik travels by boat 36 km down a river and back in 8 hours. If the speed of his boat in still water is 12km/hr, find the speed of the river current.

90. Two trains leave a railway station at the same time.The first train travels due west and the second train due north.The first train travel 5 km/hr faster than second train.If after two hours,they are 50 km apart,Find the speed of each train.

91. If the sum of the roots of the quadratic equation $ax^2 + bx + c = 0$ is equal to the sum of the squares of their reciprocals,then prove that $2a^2c = c^2b + b^2a$.

92. If the roots of the quadratic equation $ax^2 + cx + c = 0$ are in the ratio $p:q$. Then show that $\sqrt{\dfrac{p}{q}} + \sqrt{\dfrac{q}{p}} + \sqrt{\dfrac{c}{a}} = 0$

93. A business man bought some items for ₹600. Keeping 10 items for himself he sold the remaining items at a profit of ₹5 per item. From the amount received in this deal he could buy 15 more items. Find the original price of each item.

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94. A man travels by boat 36 km down a river and back in 8 hours. If the speed of his boat in

still water is 12 km/hr, find the speed of the river current.

95. A number consists of two digits whose product is 56.When 9 is subtracted from the number,the digits interchange their places.Find the number.

96. Two pipes running together can fill a cinstern in $3\dfrac{1}{13}$ minutes.If one pipe takes 3 minutes more than the other to fill it,find the time in which each pipe would fill the cistern.

97. If the sum of the roots of the quadratic equation is $\dfrac{1}{x+p} + \dfrac{1}{x+q} = \dfrac{1}{r}$ is zero,show that the product of the roots is $-\left(\dfrac{p^2 + q^2}{2}\right)$.

98. Solve:

$$\sqrt{x^2 - 16} - \sqrt{x^2 - 8x + 16} = \sqrt{x^2 - 5x + 4}$$

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