MATHS

BOOKS - BEYOND PUBLICATION

QUADRATIC EQUATIONS

Exercise

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1. Solution of the equations $\sqrt{2}x + \sqrt{3}y = 0$ and $\sqrt{3x} - \sqrt{8y} = 0$

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2. Solution of the equation $2\sqrt{2}x + 2\sqrt{5}y = 0$ and $3\sqrt{3}x + 3\sqrt{8}y = 0$

3. If $\dfrac{10}{x} + \dfrac{6}{x} = 12$ then find the value of x.

4. 300x+ 140y=4, 130x+240y = $\dfrac{50}{93}$ then find the value of 'x'.

5. 2x+3y=2,5x-6y=0 then find the value of 'x'

6. Check whether the following are quadratic equations

(x+4)(x+5) = 0

7. Check whether the following are quadratic equations

$$(x - 3)^2 + 1 = 2x - 5$$

8. Check whether the following are quadratic equation:

$$(x + 2)^3 = x^3 - 4$$

9. Check whether the following are quadratic equations

(x+2)(x-3)=(x+3)(x-1)

10. Check whether the following are quadratic equation:

$$x(x+1) + 8 = (x+2)(x-2)$$

11. Represent the following situation in the form of quadratic equations.

Sum of the two number is 25. We need to find the numbers, if the sum of their reciprocals is $\dfrac{1}{6}$.

12. Represent the following situation in the form of quadratic equations.

A train covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hr more it would have taken 30 minutes less for the journey. We need to find the original speed of the train.

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13. Represent the following situation in the form of quadratic equations.

Two numbers differ by 4 and their product is 192. We need to find the numbers.

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14. Represent the following situation in the form of quadratic equations.

If the list price of a toy is reduced by Rs2, a person can buy 2 toys more for Rs 360. We need to find the original price of the toy.

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15. Find the roots of the following quadratic equations by factorisation

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

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16. Find the roots of the following quadratic equations by factorisation

$$3x^2 - 17x - 28 = 0$$

17. Find the roots of the following quadratic equations by factorisation

$$x^2 - 2x - 24 = 0$$

18. Find the roots of the following quadratic equations by factorisation

$$2x^2 - x - 10 = 0$$

19. Find the roots of the following quadratic equations by factorisation

$$4x^2 - 17x + 4 = 0$$

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20. Find the roots of the following quadratic equations by factorisation

$$\frac{x}{3} - \frac{3}{x} = -\frac{5}{6}$$

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21. Find the roots of the following quadratic equations by factorisation

$$\frac{x(x - 7)}{9} = 2$$

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22. Find the roots of the following quadratic equations by factorisation

3x(9x-5) = 8

23. Find the roots of the following quadratic equations by factorisation

$9x^2 - 34x - 8 = 0$

24. Find the roots of the following quadratic equations by factorisation

$3x^2 - 13x + 12 = 0$

25. The sum of the squares of two consecutive odd positive intergers is 394. Find them.

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26. Three consecutive positive integers are such that the sum of the square of the first and the product of other two is 46, find the integers.

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27. Find the dimensions of a rectangle whose perimeter is 88 metres and whose area is 448 square metres.

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28. The hypotenuse of a right angled triangle is 34 cm. The difference between the other two sides of the triangle is 14 cm. Find the lengths of these sides.

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29. In a class test, the sum of the marks obtained by Ravi in Mathematics and Science is 28. Had he got 3 marks more in Mathematics and 4 marks less in Science, the product of his marks would have been 180. Find his marks in the two subjects.

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30. find the roots of the following equations if they exist, by the method of completing the square.

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

31. find the roots of the following equations if they exist, by the method of completing the square.

$$3x^2 - 17x - 28 = 0$$

32. find the roots of the following equations if they exist, by the method of completing the square.

$$3x^2 - 7x + 2 = 0$$

33. find the roots of the following equations if they exist, by the method of completing the square.

$$5x^2 - 17x - 12 = 0$$

34. The sum of the first 'n' natural numbers is given by the formula $S = \dfrac{n(n+1)}{2}$. Find 'n' if the sum is 465.

35. The speed of a boat in still water is $8\dfrac{km}{hr}$. It can go 20 km upstream and return downstream to the engine point in 5 hours 20 minutes. Find the speed of the stream.

36. Sum of the areas of two squares is $325m^2$. If the difference fo their perimeters is 20m, find the sides of the two squares.

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37. A take 5 days less than the time taken by B to finish a piece of work. If both A and B together can finish it in 6 days, find the time taken by B to finist the work.

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38. The altitude of a right traingle is 4 cm less than its base. If the hypotenuse is 20cm, find the other two sides.

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39. Find the nature of the roots of the following quadratic equations. If the real roots exist, find them

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

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40. Find the nature of the roots of the following quadratic equations. If the real roots exist, find them

$$24x^2 - 20x + 4 = 0$$

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41. Find the nature of the roots of the following quadratic equations. If the real roots exist, find them

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

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42. Find the nature of the roots of the following quadratic equations. If the real roots exist, find them

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

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43. Find the value of k for each of the following quadratic equations, so that they have two equal roots.

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

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44. Find the value of k for each of the following quadratic equations, so that they have two equal roots.

$9x^2 + 8kx + 16 = 0$

45. Find the value of k for each of the following quadratic equations, so that they have two equal roots.

$kx^2 - 6x + 1 = 0$

46. Is it possible to design a rectangular park whose length is twice its breadth, and the area is $512m^2$? If so, find its length and breadth.

47. The sum of the ages of two friends is 30 years. Five years ago, the product of their ages is 90. Is the following situation possible

? If so, determine their present ages.

48. The roots of the equation $3x^2 - 2\sqrt{6}x + 2 = 0$ are

A. $\dfrac{2}{\sqrt{3}} \cdot - \dfrac{2}{\sqrt{3}}$

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

C. $\sqrt{\dfrac{2}{3}}, \sqrt{\dfrac{2}{3}}$

D. $\dfrac{1}{\sqrt{3}}, \dfrac{5}{\sqrt{3}}$

Answer:

49. One solution of the Q.E. $2x^2 - 5x - 3 = 0$ is

A. x=2

B. x = -1

C. x = -3

D. x = 3

Answer:

50. The positive root of $\sqrt{3x^2 + 6} = 9$ is

A. 3

B. 5

C. 4

D. $\dfrac{2}{5}$

Answer:

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51. Which of the following Q.E has real and equal roots?

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

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

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

D. $x^2 - 2\sqrt{2}x - 6$

Answer:

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52. Which of thr following is a Q.E.

A. $(x + 1)^2 = 3(x + 7)$

B. (x-1)(x+3)=(x-2)(x+1)

C. $x^2 + 5x - 7 = (x - 4)^2$

D. $x^3 - 9 = 0$

Answer:

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53. The sum of a number and its recip- rocal is $\dfrac{5}{2}$ then the number is

A. 2 or $\dfrac{1}{3}$

B. 3 or $\dfrac{1}{2}$

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

D. 5 and $\dfrac{1}{5}$

Answer:

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54. If the equation $x^2 - kx + 1 = 0$ has equal roots. Then

    A. k=1

    B. k =-1

    C. k = 2

    D. k = -4

Answer:

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55. The Q.E. whose one root is $2 - \sqrt{3}$ is

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

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

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

D. $x^2 - 2x - 3 = 0$

Answer:

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56. The roots of a quadratic equation $\dfrac{x}{p} = \dfrac{p}{x}$ are

A. $\pm p$

B. p, 2p

C. $-p, 2p$

D. $-p, -2p$

Answer:

57. $\sqrt{2}x^2 - 3x + 5\sqrt{2} = 0$ sum of the roots is......

A. $\dfrac{3}{\sqrt{2}}$

B. $-\dfrac{3}{\sqrt{2}}$

C. 3

D. 5

Answer:

58. The quadratic equation whose roots are -3 and -4 is ...

A. $7x^2 + x + 1 = 0$

B. $x^2 + 7x + 12 = 0$

C. $x^2 - 3x + 1 = 0$

D. none

Answer:

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59. The nature of the roots of a quadratic equation $4x^2 - 12x + 9 = 0$ is....

A. real and real

B. real and distinct

C. imaginary

D. none

Answer:

60. The roots of the quadratic equation $\dfrac{x^2 - 8}{x^2 + 20} = \dfrac{1}{2}$ are...

A. ± 2

B. ± 6

C. ± 13

D. ± 7

Answer:

61. If $b^2 - 4ac = 0$ then the roots of the quadratic equation are...

A. real and distinct

B. real and equal

C. imaginary

D. none

Answer:

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62. The nature of roots of $3x^2 + 6x - 2 = 0$is....

A. real and distinct

B. real and equal

C. complex

D. none

Answer:

63. Product of the roots of $ax^2 + bx + c = 0$ is...

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

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

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

D. none

Answer:

64. The quadratic equation whose roots are 2,3 is...

A. $x^2 - 5x + 1 = 0$

B. $x^2 - 5x - 6 = 0$

C. $x^2 - 3x + 1 = 0$

D. $x^2 - 5x + 6 = 0$

Answer:

65. $\dfrac{2a^2 + a - 1}{a + 1} + \dfrac{3a^2 + 5a + 2}{3a + 2} + \dfrac{4 - a^2}{a + 2} = \ .\ .$

A. $\dfrac{a}{2} + 2$

B. $\dfrac{a + 1}{2}$

C. 2(a+1)

D. none

Answer:

66. $\dfrac{1 - \dfrac{1}{1+x}}{\dfrac{1}{1+x}} = \ .\ .$

A. 1

B. x^2

C. x

D. 0

Answer:

67. IF the sum of the roots of $ax^2 + bx + c = 0$ is equal to the sum of the squares of the roots, then..........

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

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

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

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

Answer:

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68. The nature of roots of $3x^2 + 13x - 2 = 0$

A. real and unequal

B. real and equal

C. complex

D. none

Answer:

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69. Product of the roots of $x^2 + 7x = 0$ is...

A. 1

B. -7

C. -3

D. 0

Answer:

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70. If α and β are the roots of $x^2 - 2x + 3 = 0$ then $\alpha^2\beta^2 =$

A. 1

B. 4

C. 8

D. none

Answer:

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71.

If α and β are the roots of $x^2 - 5x + 6 = 0$ then the value of $\alpha - \beta =$

A. ± 1

B. ± 2

C. -3

D. none

Answer:

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72. Form a quadratic equation from

$$x^3 - 4x^2 - x + 1 = (x - 2)^3 =$$

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

B. $2x^2 - 13x + 9 = 0$

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

D. none

Answer:

73. The product of two consecutive positive integers is 306. We need to find the integers.

A. 16

B. 13

C. 19

D. 17

Answer:

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74. $x(x + 4) = 12$ then x =..

A. -6 or 2

B. 6 or 7

C. 8 or -9

D. none

Answer:

75. 9 and 1 are the roots of....

A. $x^2 - 10x + 9 = 0$

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

C. $x^2 + 3x + 4 = 0$

D. none

Answer:

76. The discriminant of $3x^2 - 2x = \dfrac{-1}{3}$ is

A. 1

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

C. 8

D. 0

Answer:

77. Which of the following is a quadratic equation?

A. $x^2 - 3x + 1$

B. $8x^3 + 7x^2 + 1$

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

D. all

Answer:

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78. $(\alpha + \beta)^2 - 2\alpha\beta=$

A. $\alpha^2 + \beta^2 + 1$

B. $\alpha^2 + \beta^2$

C. $\alpha^2 + \beta^2$

D. $\alpha\beta$

Answer:

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79. If α, β are the roots of $x^2 - px + q = 0$ then $\alpha^3 + \beta^3 = \ldots$.

A. $p + q^3$

B. $p - 3p^3 q$

C. $p^3 - 3pq$

D. $p^2 - 3pq$

Answer:

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80. (1-5x)(9x+1)=......

A. $3x^2 + 1 + x$

B. $8x^2 - 5x + 1$

C. $1 - 4x + 5x^2$

D. $1 + 4x - 45x^2$

Answer:

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81. The roots of $x = \dfrac{1}{x}$ are...

A. 2 or -2

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

C. 1 or -1

D. all

Answer:

82. if $\dfrac{-7}{3}$ is a root of $6x^2 - 13x - 63 = 0$ then other root is....

A. 8

B. $\dfrac{1}{3}$

C. $\dfrac{2}{9}$

D. $\dfrac{9}{2}$

Answer:

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83. $\sqrt{a + \sqrt{a + \sqrt{a + \ldots\ldots\infty}}} = \ldots\ldots\ldots$.

A. $a^{1/2}$

B. a

C. a^3

D. $a/2$

Answer:

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84. IF one root of $x^2 - x - k = 0$ is square that of the other, then

k=.........

A. 2

B. 3

C. -4

D. none

Answer:

85. The roots of $2x^2 + x - 4 = 0$ are...

A. $\dfrac{-1 \pm \sqrt{33}}{4}$

B. $\left(-1 \pm \dfrac{\sqrt{31}}{2} \right)$

C. $\left(-1 \pm \dfrac{\sqrt{29}}{2} \right)$

D. none

Answer:

86. If $b^2 < 4ac$ then shape of graph is....

A.

B.

C.

D. none

Answer:

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87. One of the roots of the Q.E. $6x^2 - x - 2 = 0$ is

A. $\dfrac{1}{3}$

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

C. $-\dfrac{2}{3}$

D. $\dfrac{2}{3}$

Answer:

88. The sum of a number and its reciprocal is $\frac{50}{7}$,then the number is

A. $\frac{1}{7}$

B. 5

C. $\frac{2}{7}$

D. $\frac{3}{7}$

Answer:

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89. $If 5x^2 - kx + 11 = 0$ has a root x = 3, then k =

A. $\frac{16}{3}$

B. $\frac{56}{3}$

C. $-\dfrac{17}{3}$

D. 15

Answer:

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90. The value of p for which $4x^2 - 2px + 7 = 0$ has a real root is

A. $p > 2\sqrt{7}$

B. $p > \sqrt{7}$

C. $p > \sqrt{5}$

D. $p > \sqrt{3}$

Answer:

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91. The standard form of a Q.E. is

A. ax+b=0

B. ax^2+bx+c=0,a!=0`

C. $ax^3 + bx^2 + cx + d = 0$

D. $a^2x + b^2y = c^2$

Answer:

92. The roots of the Q.E.
$$\frac{9}{x^2 - 27} = \frac{25}{x^2 - 11}$$ are

A. ± 11

B. ± 3

C. ± 9

D. ± 6

Answer:

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93. The Q.E. whose roots are -2,-3 is

A. $x62 - 5x + 6 = 0$

B. $x^2 + 5x + 6 = 0$

C. $x^2 - 5x - 6 = 0$

D. $x^2 - 5x - 6 = 0$

Answer:

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94. Form a quadratic equation whose roots are k and $\dfrac{1}{k}$

A. $x^2 + \left(k + \dfrac{1}{k}\right)x + 1 = 0$

B. $xk^2 - kx + 1 = 0$

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

D. $x^2 - \left(k + \dfrac{1}{k}\right)x + 1 = 0$

Answer:

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95. The sum of the roots of the quadratic equation $5x^2 + 4\sqrt{3}x - 11 = 0$ is

A. $-\dfrac{11}{5}$

B. $\dfrac{11}{3}$

C. $-\dfrac{4}{3}$

D. $-\dfrac{4}{5}\sqrt{3}$

Answer:

96. If one root of a quadratic equation is $7 - \sqrt{3}$ then the quadratic equation is ....

A. $x^2 - 7x + 3 = 0`$

B. $x^2 - 4x + 6 = 0$

C. $x^2 - 7x + 1 = 0$

D. $x^2 - 14x + 46 = 0$

Answer:

97. The roots of a quadratic equation $\left(\sqrt{2}x + 3\right)\left(5x - \sqrt{3}\right) = 0$ are.....

A. $\dfrac{1}{3}, \dfrac{1}{a} qrt2$

B. $-\dfrac{1}{2}, \dfrac{3}{\sqrt{5}}$

C. $-\dfrac{3}{\sqrt{2}}, \dfrac{1}{5}$

D. $-\dfrac{3}{\sqrt{2}}, \dfrac{\sqrt{3}}{5}$

Answer:

98. If $b^2 - 4ac = 0$ then the roots of the quadratic equation are...

A. real and distinct

B. real and equal

C. imaginary

D. none

Answer:

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99. The roots of $2x^2 - 3x + 5 = 0$ are

A. real

B. not real

C. real and equal

D. none

Answer:

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100. The quadratic equation whose roots are -2 and -3 is...

A. $x^2 + 6x + 1 = 0$

B. $x^2 + 5x + 6 = 0$

C. $x^2 - 5x + 1 = 0$

D. none

Answer:

101. $\dfrac{1}{a+3} + \dfrac{1}{a-3} + \dfrac{6}{9-a^2} = \ .\ .$

A. $\dfrac{1}{a+2}$

B. $\dfrac{3}{a+2}$

C. $\dfrac{2}{a+3}$

D. $\dfrac{2}{a+3}$

Answer:

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102. If $(2x - 1)(2x + 3) = 0$ then x. .

A. $\dfrac{1}{2}$ or $-\dfrac{1}{2}$

B. $\dfrac{1}{2}$ or $-\dfrac{3}{2}$

C. $\dfrac{1}{2}$ or $\dfrac{2}{3}$

D. none

Answer:

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103. If α and β are the roots of the quadratic equation $2x^2 + 3x - 7 = 0$ then $\dfrac{\alpha^2 + \beta^2}{\alpha\beta} =$

A. $-\dfrac{37}{16}$

B. $-\dfrac{37}{4}$

C. $-\dfrac{37}{14}$

D. $\dfrac{37}{8}$

Answer:

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104. The degreee of any quadratic equation is..

A. 4

B. 1

C. 2

D. 3

Answer:

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105. The product of two consecutive positive integers is 306. We need to find the integers.

A. 12

B. 16

C. 18

D. 10

Answer:

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106. Find the roots of the quadratic equations by factorisation:

$$3(x - 4)^2 - 5(x - 4) = 12$$

A. $6, \ -\dfrac{1}{17}$

B. $8, \ -\dfrac{1}{2}$

C. $3,4$

D. $3, \ -\dfrac{4}{3}$

Answer:

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107. The discriminant of the quadratic equation $px^2 + qx + r = 0$

is....

A. $q^2 - pr$

B. `q-4pr

C. $q^2 - 4pr$

D. none

Answer:

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108. If α is a root of $ax^2 + bx + c = 0$ then $a\alpha^2 + b\alpha + c = $ ....

A. $-c$

B. 0

C. 8

D. 1

Answer:

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109. Discriminant of the quadratic equation $x + \dfrac{1}{x} = 3$ is...

A. -10

B. 9

C. 6

D. 5

Answer:

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110. If the sum of the roots of $kx^2 - 3x + 1 = 0$ is $\dfrac{-4}{3}$ then k = ...

A. $-\dfrac{4}{9}$

B. $\dfrac{9}{5}$

C. $-\dfrac{9}{4}$

D. none

Answer:

111. If $p(x) = 4x^2 - 4x + 1$, then p(0)=

A. 1 or 3

B. 2 or 7

C. 8 or $\dfrac{1}{2}$

D. 2 or -3

Answer:

112. $\sqrt{a + \sqrt{a + \sqrt{a + \ldots\ldots\infty}}} = \ldots\ldots$.

A. $\dfrac{1 + \sqrt{1 + 4a}}{2}$

B. $\dfrac{1 - \sqrt{4a - 2}}{3}$

C. `(1+sqrt2)/2

D. none

Answer:

113. If $\dfrac{1}{x - 2} + \dfrac{2}{x - 1} = \dfrac{6}{x}$ then x = ...

A. 3 or $\dfrac{4}{3}$

B. 3 or $-\dfrac{1}{3}$

C. 1 or $\dfrac{2}{3}$

D. 8 or $\dfrac{7}{2}$

Answer:

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114. Sum of the roots of a pure quadratic equation is..

A. -13

B. 12

C. -9

D. 0

Answer:

115. If the sum of the squares of two consecutive odd numbers is 74, then the smaller number is

A. 11

B. 3

C. 7

D. 5

Answer:

116. The roots of the Q.E. $\sqrt{3}x^2 - 2x - \sqrt{3} = 0$ are

   A. real and distinct

   B. Real and equal

   C. Not real

   D. Can't be determined

Answer:

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117. The roots of $5x^2 - x + 1 = 0$ are

   A. Real and equal

   B. Real and unequal

   C. imaginary

D. None

Answer:

118. The roots of the Q.E. $(7x - 1)(2x + 3) = 0$ are

A. 1,3

B. $\dfrac{1}{7}, \dfrac{3}{2}$

C. $\dfrac{1}{7}, -\dfrac{3}{2}$

D. $-\dfrac{1}{7}, -\dfrac{3}{2}$

Answer:

119. The roots of the Q.E. $\left(x - \dfrac{1}{3} \right)^2 = 9$

A. 10,8

B. $-\dfrac{10}{3}, \dfrac{8}{3}$

C. $\dfrac{10}{3}, -\dfrac{8}{3}$

D. (-3,3)

Answer:

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120. If (x - 3)(x + 3) = 16 then the value of x is

A. ± 4

B. ± 3

C. ± 6

D. ± 5

Answer:

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121. The product of the roots of the quadratic equation

$$\sqrt{2}x^2 - 3x + 5\sqrt{2} = 0$$

A. $-\dfrac{5}{3}$

B. $\sqrt{2}$

C. 5

D. 3

Answer:

122. The nature of the roots of quadratic equation $3x^2 + x + 8 = 0$ is...

A. real and distinct

B. real and equal

C. imaginary

D. none

Answer:

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123. $If \, b^2 - 4ac < 0$ then the roots of the quadratic equation are...

A. distinct

B. equal

C. imaginary

D. none

Answer:

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124. IF the sum of the roots of $ax^2 + bx + c = 0$ is equal to the sum of the squares of the roots, then........

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

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

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

D. none

Answer:

125. $\dfrac{x}{x-y} - \dfrac{y}{x+y} = \, .\,.$

A. $\dfrac{x^2 + y^2}{x^2 - y^2}$

B. $\dfrac{x^2 + y^2}{x + y}$

C. $\dfrac{x^2 y^2}{x + y}$

D. none

Answer:

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126. $\left(x + \dfrac{1}{x}\right)^2 - \left(y + \dfrac{1}{y}\right)^2 - \left(xy - \dfrac{1}{xy}\right) \cdot \left(\dfrac{x}{y} - \dfrac{y}{x}\right) = \ldots\ldots$

A. 0

B. 1

C. xy

D. $\dfrac{1}{xy}$

Answer:

127. Prove that the roots of $(x - a)(x - b) = h^2$ are always real.

A. real

B. not real

C. complex

D. none

Answer:

128. Form a quadratic equation from $x(2x + 3) = x^2 + 1$

A. $x^2 + 3x - 1 = 0$

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

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

D. none

Answer:

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129. The roots of $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$ are ....

A. $-\dfrac{5}{\sqrt{2}}$ or 7

B. $-\dfrac{5}{\sqrt{2}}$ or $-\sqrt{2}$

C. $-\sqrt{2}$ or $\dfrac{5}{\sqrt{3}}$

D. all

Answer:

---

130. On solving $x^2 + 5 = -6x$ we get x =

A. 5 or -2

B. -1 or -5

C. -3 or -7

D. none

Answer:

131. If $kx(x-2)+6=0$ has equal roots then k =

A. 3

B. -6

C. 7

D. 6

Answer:

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132. If one root of $x^2-(p-1)x+10=0$ is 5 then p =

A. 8

B. 7

C. -3

D. none

Answer:

133. $\sqrt{k + 1} = 3$ then k = ...

A. 24

B. 16

C. 19

D. none

Answer:

134. The quadratic inequation with $2 < x < 3$ is...

A. $x^2 + 6x + 5 < 0$

B. $x^2 - 5x + 6 > 0$

C. $x^2 - 5x + 6 < 0$

D. none

Answer:

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135. క్రింది సమీకరణాల మూలాలను కనుగొనుము.

$$\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}, x \neq -4, 7$$

A. -2 or 1

B. 2 or 1

C. -1 or 3

D. 7 or $\dfrac{1}{2}$

Answer:

---

136. The roots of the equation $4x^2 + 4\sqrt{3}x + 3 = 0$ are

A. $\dfrac{\sqrt{3}}{2}$

B. $-\dfrac{\sqrt{3}}{2}$

C. -4

D. -2

Answer:

137. The sum of the roots of the equation $3x^2 - 7x + 11 = 0$

A. $\dfrac{11}{3}$

B. $-\dfrac{7}{3}$

C. $\dfrac{7}{3}$

D. $\dfrac{3}{7}$

Answer:

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138. The roots of the Q.E. $\left(\sqrt{5}x - 3\right)\left(\sqrt{5}x - 3\right) = 0$ are

A. $\dfrac{3}{\sqrt{5}}, \dfrac{3}{\sqrt{5}}$

B. $-\dfrac{3}{\sqrt{5}}, -\dfrac{3}{\sqrt{5}}$

C. $\dfrac{3}{\sqrt{5}}, -\dfrac{3}{\sqrt{5}}$

D. $\dfrac{\sqrt{3}}{\sqrt{5}}, \dfrac{\sqrt{3}}{\sqrt{5}}$

Answer:

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139. The roots of the QE

$(3x + 4)^2 - 49 = 0$ are

A. $1, -\dfrac{11}{3}$

B. $\dfrac{1}{3}, \dfrac{11}{3}$

C. $-\dfrac{1}{3}, -\dfrac{11}{3}$

D. 1,-11

Answer:

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140. If the sum of the roots of the Q.E. $3x^2 + (2k + 1)x - (k + 5) = 0$ is equal to the product of the roots, then the value of k is

A. 3

B. 4

C. 2

D. 6

Answer:

141. The sum of the roots of the quadratic equation $5x^2 + 4\sqrt{3}x - 11 = 0$ is

A. $\dfrac{5}{-11}$

B. $\dfrac{1}{5}$

C. $-\dfrac{11}{5}$

D. $\dfrac{1}{5}$

Answer:

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142. The discriminant of $5x^2 - 3x - 2 = 0$ is...

A. 49

B. 89

C. 20

D. none

Answer:

▶

143. Find the nature of the roots of $4x^2 - 20x + 25 = 0$

    A. real and equal

    B. imaginary

    C. real and distinct

    D. none

Answer:

144. $4x^2 + kx - 2 = 0$ has no real roots if.....

    A. $k > -\sqrt{32}$

    B. k = 10

C. $k < -\sqrt{32}$

D. none

Answer:

145. $(x - \alpha)(x - \beta) = 0$ then

A. $x^2(\alpha)x + \beta\alpha = 0$

B. $x^2 - (\alpha + \beta)x + \alpha\beta = 0$

C. $\alpha x^2 - x\beta + \alpha\beta = 0$

D. none

Answer:

146. For what values of m are the roots of the equation $mx^2 + (m + 3)x + 4 = 0$ are equal?

   A. 1 or 5

   B. -1 or 2

   C. 8 or 1

   D. 9 or -7

Answer:

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147. If $x + \dfrac{1}{x} = 2$ then $x^2 + \dfrac{1}{x^2} = \ldots$

   A. 8

   B. 0

C. 4

D. 2

Answer:

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148. Verify that 1 and $\dfrac{3}{2}$ are the roots of the equation $2x^2 - 5x + 3 = 0$.

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

B. $x^2 - 5x + 1 = 0$

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

D. all

Answer:

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149. IF the equation $x^2 + 5x + K = 0$ has no real and distinct roots, then.........

    A. no real roots

    B. real roots

    C. equal roots

    D. none

Answer:

150. Diagonal of rectangle is .... units.

    A. $\sqrt{l} + b^2$

B. $\sqrt{l} + b$

C. $\sqrt{lb}$

D. $\sqrt{l^2 + b^2}$

Answer:

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151. The coefficient of x in a pure quadratic equation is...

A. 2

B. 0

C. 8

D. none

Answer:

152. If 2 is a root of $x^2 + 5x + r = 0$ then r = ...

A. -4

B. -14

C. 16

D. 8

Answer:

153. $x^2 + (x+2)^2 = 290$ then x = ..

A. 9 or -13

B. 8 or -12

C. 11 or -13

D. all

Answer:

154. If $3y^2 = 192$ then y =

A. 12

B. 6

C. 8

D. none

Answer:

155. $If x^2 - 2x + 1 = 0 then x + \dfrac{1}{x} =$

A. 0

B. 2

C. 1

D. none

Answer:

156. Product of the roots of the Q.E.

$3x^2 - 6x + 11 = 0 is$

A. 2

B. $-\dfrac{11}{3}$

C. $-\dfrac{11}{6}$

D. $\dfrac{11}{3}$

Answer:

157. Show that the product of the roots of a quadratic equation $ax^2 + bx + c = 0 (a \neq 0)$ is $\dfrac{c}{a}$.

A. $\dfrac{-b + \sqrt{b^2 + 4ac}}{ac}$

B. $\dfrac{-b - \sqrt{b^2 - 4}}{3}$

C. $\dfrac{-b - \sqrt{b - 4ac}}{2}$

D. $\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Answer:

158. The nature of the roots of a quadratic equation $4x^2 + 5x + 1 = 0$ is.....

    A. real and distinct

    B. real and equal

    C. imaginary

    D. none

Answer:

159. If the roots of a quadratic equation $ax^2 + bx + c = 0$ are real and equal then $b^2 =$...

A. 4ab

B. 4ac

C. $a\dfrac{c}{4}$

D. a^2c^2

Answer:

160. $3x^2 + (-kx) + 8 = 0$ has real roots if ...

A. $k < 4\sqrt{6}$

B. $k > 4\sqrt{6}$

C. k = 6

D. k = 0

Answer:

---

161. If $x^2 - 8kx + 16 = 0$ has equal roots then ....

A. $k = \pm\sqrt{2}$

B. $k = \pm 7$

C. `k = +-1

D. `none

Answer:

---

162. Sum of the roots of $-7x + 3x^2 - 1 = 0$ is

A. $\dfrac{3}{4}$

B. $\dfrac{1}{7}$

C. $\dfrac{7}{3}$

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

Answer:

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163. If α and β are the roots of $x^2 - 2x + 3 = 0$ the value of $\alpha^3 + \beta^3 =$ ......

A. -10

B. 10

C. 8

D. 12

Answer:

164. In the quadratic equation $x^2 + x - 2 = 0, a + b + c =$

A. 7

B. 0

C. 8

D. 1

Answer:

165. The roots of $2x^2 - x + \dfrac{1}{8} = 0$ are...

A. $\dfrac{1}{4}, \dfrac{1}{2}$

B. $\dfrac{1}{3}, \dfrac{1}{7}$

C. $\dfrac{1}{2}, \dfrac{1}{8}$

D. $\dfrac{1}{4}, \dfrac{1}{4}$

Answer:

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166. Number of distinct line segments that can be formed out of n-points is...

A. $\dfrac{n(n-1)}{2}$

B. $\dfrac{n}{2}$

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

D. $\dfrac{n^2(n-1)}{2}$

Answer:

167. From the figure , x=...

A. 7

B. 3

C. `10

D. none

Answer:

168. $P(x) = x^2 + 2x + 1$ then $P(x^2) =$

A. $x^4 + 2x^2 + 1$

B. $x^4 + 2x + 1$

C. $x^3 + 2x + 1$

D. none

Answer:

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169. If α and β are the roots of the quadratic equation $x^2 - 3x + 1 = 0$ then $\dfrac{1}{\alpha^2} + \dfrac{1}{\beta^2}$

A. 7

B. 8

C. -3

D. none

Answer:

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170. $\sqrt{x} = \sqrt{2x-1}$ then $x = \ldots$

A. 1

B. 4

C. 2

D. none

Answer:

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171. A pentagon has... diagonals.

A. 6

B. 7

C. 9

D. none

Answer:

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172. Product of the roots of $1 = x^2$ is..

A. -1

B. 7

C. 0

D. 1

Answer:

---

173. If α, β are the roots of $x^2 + x + 1 = 0$, then $\alpha^{-2} + \beta^{-2}$ is

A. 8

B. -1

C. 12

D. 0

Answer:

174. $\dfrac{x}{a-b} = \dfrac{a}{x-b}$ then x =..

A. b-a or $\dfrac{a}{2}$

B. b-a or -a

C. b+a or -a

D. all

Answer:

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175. $\dfrac{n(n+1)}{2} = 55$ then n = ...

A. 13

B. 16

C. 10

D. 12

Answer:

---

176. If α and β are the roots of $x^2 - 2x + 3 = 0$ then $\alpha^2\beta + \beta^2\alpha$ =....

A. -3

B. 8

C. 6

D. none

Answer:

177. $x^2 - 7x - 60 = 0$ then x =..

A. 12,17

B. 12,-6

C. 8,11

D. 12,16

Answer:

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178. The general form of a quadratic equation in variable x is......

A. $ax^2 + bx + c = 0(a \neq 0)$

B. $ax + bx^2 + c = 0(b \neq 0)$

C. $ax^2 + bx = 0(a \neq 0)$

D. $a^2x + bx + c = 0) b \neq 0)$

Answer:

179. The possible number of roots to a quadratic equation are....

A. At a maximum of 3

B. At a maximum of 2

C. Infinite

D. At a maximum of 5

Answer:

180. If the roots of a quadratic equation $px^2 + qx + r = 0$ are imaginary then......

A. $q^2 > 4pr$

B. $q^2 < 4pr$

C. $q^2 = 4pr$

D. p = q+r

Answer:

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181. The discriminant of quadratic equation $2x^2 + x - 4 = 0$ is...

A. 35

B. 36

C. 33

D. 38

Answer:

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182. The product of roots of quadratic equation $ax^2 + bx + c = 0$ is

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

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

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

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

Answer:

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183. For what positive value of x the quadratic equation

$4x^2 - 9 = 0$

A. $\dfrac{2}{3}$

B. $-\dfrac{2}{3}$

C. $-\dfrac{3}{2}$

D. $\dfrac{3}{2}$

Answer:

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184. Which of the following quadratle. Equations the roots are equal?

A. $x^2 - 5 = 0$

B. $x^2 - 10x + 25 = 0$

C. $x^2 + 5x + 6 = 0$

D. $x^2 - 1 = 0$

Answer:

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185. If $x^2 + ax + b = 0, x^2 + bx + a = 0$ have a common roots then

A. a+b = 0

B. ab = 1

C. a+b = 1

D. a+b+1 = 0

Answer:

186. A metal cuboid of dimension $22cm \times 15cm \times 7.5$ cm , was melted and cast into a cylinder of height 14 cm .What is its radius?

    A. 15 cm

    B. 7.5 cm

    C. 22.5 cm

    D. 7cm

Answer:

187. Solution of x-y=2,x+y=0 lies in.....quadrant.

A. I

B. IV

C. II

D. III

Answer:

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188. Two numbers differ by 5 and their product is 300. We need to find the numbers.

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189. The base of a triangle is 7 cm longer than its altitude. If the area of the triangle is 30 sq.cm, then find its base and altitude.

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190. The diagonal of a rectangular plot is 40 metres more than the shorter side. If the longer side is 20 metres more than the shortere side, find the sides of the plot.

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191. The sum of the ages of two friends is 30 years, 5 years ago, the product of their ages in years was 75. Is the situation possible? If so, determine their present ages.

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192. The roots of the equation $3x^2 - 2\sqrt{6}x + 2 = 0$ are

A. $\dfrac{2}{\sqrt{3}} \cdot -\dfrac{2}{\sqrt{3}}$

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

C. $\sqrt{\dfrac{2}{3}}, \sqrt{\dfrac{2}{3}}$

D. $\dfrac{1}{\sqrt{3}}, \dfrac{5}{\sqrt{3}}$

Answer:

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193. Which of thr following is a Q.E.

A. $(x + 1)^2 = 3(x + 7)$

B. (x-1)(x+3)=(x-2)(x+1)

C. $x^2 + 5x - 7 = (x - 4)^2$

D. $x^3 - 9 = 0$

Answer:

194. Product of the roots of the Q.E.

$3x^2 - 6x + 11 = 0$is

   A. 2

   B. $\dfrac{11}{3}$

   C. $-\dfrac{11}{6}$

   D. $\dfrac{11}{3}$

Answer:

195. The quadratic equation whose roots are 2,3 is...

A. $x^2 - 5x + 1 = 0$

B. $x^2 - 5x - 6 = 0$

C. $x^2 - 7x + 1 = 0$

D. $x^2 - 14x + 46 = 0$

Answer:

196. $\dfrac{2a^2 + a - 1}{a + 1} + \dfrac{3a^2 + 5a + 2}{3a + 2} + \dfrac{4 - a^2}{a + 2} = \,..$

A. $\dfrac{a}{2} + 2$

B. $\dfrac{a + 1}{2}$

C. $2(a+1)$

D. none

Answer:

197. The roots of $2x^2 - x + \dfrac{1}{8} = 0$ are...

A. $\dfrac{1}{4}, \dfrac{1}{2}$

B. $\dfrac{1}{3}, \dfrac{1}{7}$

C. $\dfrac{1}{2}, \dfrac{1}{8}$

D. $\dfrac{1}{4}, \dfrac{1}{4}$

Answer:

198. $P(x) = x^2 + 2x + 1$ then $P(x^2) =$

A. $x^4 + 2x^2 + 1$

B. $x^4 + 2x + 1$

C. $x^3 + 2x + 1$

D. none

Answer:

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199. $\sqrt{a + \sqrt{a + \sqrt{a + \ldots\ldots\infty}}} = \ldots\ldots$.

A. $\dfrac{1 + \sqrt{1 + 4a}}{2}$

B. $\dfrac{1 - \sqrt{4a - 2}}{3}$

C. `(1+sqrt2)/2

D. none

Answer:

---

200. The roots of $2x^2 - 3x + 5 = 0$ are

A. $\dfrac{-1 \pm \sqrt{33}}{4}$

B. $\left(-1 \pm \dfrac{\sqrt{31}}{2} \right)$

C. $\left(-1 \pm \dfrac{\sqrt{29}}{2} \right)$

D. none

Answer:

201. One of the roots of the Q.E. $6x^2 - x - 2 = 0$ is

A. $\dfrac{1}{3}$

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

C. $-\dfrac{2}{3}$

D. $\dfrac{2}{3}$

Answer:

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202. The sum of a number and its reciprocal is $\dfrac{50}{7}$,then the number is

A. $\dfrac{1}{7}$

B. 5

C. $\dfrac{2}{7}$

D. $\dfrac{3}{7}$

Answer:

---

203. One solution of the Q.E. $2x^2 - 5x - 3 = 0$ is

A. x = 2

B. x = -1

C. x = -3

D. x = 3

Answer:

204. The roots of the Q.E. $(7x - 1)(2x + 3) = 0$ are

A. 1,3

B. $\dfrac{1}{7}, \dfrac{3}{2}$

C. $-\dfrac{1}{7}, -\dfrac{3}{2}$

D. $-\dfrac{1}{7}, -\dfrac{3}{2}$

Answer:

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205. The roots of the QE

$(3x + 4)^2 - 49 = 0$ are

A. $1, -\dfrac{11}{3}$

B. $\dfrac{1}{3}, \dfrac{11}{3}$

C. $-\dfrac{1}{3}, \ -\dfrac{11}{3}$

D. 1,-11

Answer:

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206. Find the roots of $3x^2 - 4\sqrt{3}x + 4 = 0$

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207. Find the roots of $3x^2 - 2\sqrt{12}x + 4 = 0$

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208. Is it possible to desigh a rectangular park of perimeter 80m and area $400m^2$? If so, find its length and breadth.

209. The sum of the squares of two consective odd positive intergers is 400 find them.

Example

1. Check whether the following are quadratic equations:

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

2. Check whether the following are quadratic equation:

$$x(x + 1) + 8 = (x + 2)(x - 2)$$

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3. Check whether the following are quadratic equation:

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

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4. Check whether the following are quadratic equation:

$$(x + 2)^3 = x^3 - 4$$

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5. Check whether the following are quadratic equations:

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

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6. Chek whether the following are quadratic equation:

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

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7. Chek whether the following are quadratic equation:

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

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8. Check whether the following are quadratic equations:

$$(x - 3)(2x + 1) = x(x + 5)$$

9. Chek whether the following are quadratic equation:

$$(2x - 1)(x - 3) = (x + 5)(x - 1)$$

10. Chek whether the following are quadratic equation:

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

11. Chek whether the following are quadratic equation:

$$(x + 2)^3 = 2x\left(x^2 - 1\right)$$

12. Chek whether the following are quadratic equation:

$$x^3 - 4x^2 - x + 1 = (x - 2)^3$$

13. Represent the following situations in the form of quadratic equation:

The area of a rectangular plot is $528\ m^2$. The length of the plot is one metre more than twice its breadth. We need to find the length and breadth of the plot.

14. Represent the following situations in the form of quadratic equation:

The product of two consecutive positive integers is 306. We need to find the integers.

15. Represent the following situations in the form of quadratic equation:

Rohan's mother is 26 years older than him. The product of their ages after 3 years will be 360 years. We need to find Rohan's present age

16. A train travels a distance of 480 km at a uniform speed. If the speed had been 8km/h less, then it would have taken 3 hours more to cover the same distance. We need to find the speed of the train.

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17. Verify that 1 and $\dfrac{3}{2}$ are the roots of the equation $2x^2 - 5x + 3 = 0$.

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18. Find the roots of the equation $2x^2 - 5x + 3 = 0$ by factorisation.

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19. Find the roots of the quadratic equation $x - \dfrac{1}{3x} = \dfrac{1}{6}$

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20. Find the roots of the following quadratic equations by factorisation.

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

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21. Find the roots of the following quadratic equations by factorisation

$2x^2 + x - 6 = 0$

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22. Find the roots of the following quadratic equations by factorisation

$$\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$$

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23. Find the roots of the following quadratic equations by factorisation

$$2x^2 - x + \frac{1}{8} = 0$$

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24. Find the roots of the following quadratic equations by factorisation

$$100x^2 - 20x + 1 = 0$$

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25. Find the roots of the following quadratic equations by factorisation

$x(x + 4) = 12$

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26. Find the roots of the following quadratic equations by factorisation

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

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27. Find the roots of the following quadratic equations by factorisation

$x - \dfrac{3}{x} = 2$

28. Find the roots of the following quadratic equations by factorisation

$$3(x-4)^2 - 5(x-4) = 12$$

29. Find two numbers whose sum is 27 and product is 182.

30. Find two consecutive positive integers, sum of whose squares is 613.

31. The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, find the other two sides.

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32. A cottage industry produces a certain number of pottery articles in a day. It was observed on a particular day that the cost of production of each article (in rupees) was 3 more than twice the number of articles produced on that day. If the total cost of production on that day was Rs. 90, find the number of articles produced and the cost of each article.

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33. Find the dimensions of a rectangle whose perimeter is 28 meters. And whose area is 40 square meters.

34. The base of a triangle is 4cm longer than its altitude. If the area of the triangle is 48 sq.cm, then find its base and altitude.

35. Two trains leave a railway station at the same time. The first train travels towards west and the second train towards north. The first train travels 5 km/hr faster then the second train. If after two hours they are 50 km. apart, find the average speed of each train.

36. In a class of 60 students, each boy contributed rupees equal to the number of girls and each girl contributed rupees equal to the number of boys. If the total money then collected was Rs. 1600, how many boys are there in the class?

37. A motor boat heads upstream a distance of 24km on a river whose current is running at 3km per hours. Assuming that the motor boat maintained a constant speed, what was its speed ?

38. Find the roots of the equation $5x^2 - 6x - 2 = 0$ by the method of completing the square.

39. Find the roots of $4x^2 + 3x + 5 = 0$ by the method of completing the square.

40. Find two consecutive odd positive integers, sum of whose squares is 290.

41. A rectangular park is to be designed whose breadth is 3 m less than its length. Its area is to be 4 square metres more than area of a park that has already been made in the shape of an isosceles triangle with its base as the breadth of the reatangular park and of altitude 12m. Find its length and breadth.

42. Find the roots of the following quadratic equations, if they exist.

$$x^2 + 4x + 5 = 0$$

43. Find the roots of the following quadratic equations, if they exist.

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

44. Find the roots of the following equations:

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

45. Find the roots of the following equations:

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

46. A motor boat whose speed is 18km/h in still water. It takes 1 hour more to go 24km upstream than to return downstream to the same spot. Find the speed of the stream.

47. Solve the equations by completing the square.

$$x^2 - 10x + 9 = 0$$

48. Solve the equations by completing the square

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

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49. Solve the equations by completing the square

$$x^2 + 7x - 6 = 0$$

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50. We have three methods to solve a quadratic equations. Among

these three, which metod would you like to use? Why?

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51. Find the roots of the following quadratic equations, if they exist, by the method of completing the square:

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

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52. Find the roots of the following quadratic equations, if they exist, by the method of completing the square:

$$4x^2 + 4\sqrt{3}x + 3 = 0$$

> ▶ Watch Video Solution

53. Find the roots of the following quadratic equations, if they exist, by the method of completing the square:

$$5x^2 - 7x - 6 = 0$$

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54. Find the roots of the following quadratic equations, if they exist, by the method of completing the square:

$$5x^2 - 7x - 6 = 0$$

55. Find the roots of the quadratic equation by applying the quadratic formula.

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

56. Find the roots of the quadratic equation by applying the quadratic formula.

$$4x^2 + 4\sqrt{3}x + 3 = 0$$

57. Find the roots of the quadratic equation by applying the quadratic formula.

$$5x^2 - 7x - 6 = 0$$

58. Find the roots of the quadratic equation by applying the quadratic formula.

$$x^2 + 5 = -6x$$

59. Find the roots of the following equations:

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

60. Find the roots of the following equations :

$$\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}, x \neq -4, 7$$

61. The sum of the reciprocals of Rehman ages, (in years) 3 years ago and 5 year from now is $\frac{1}{3}$ Find his present age.

62. In a class test, the sum of Moulika's marks in Mathematics and English is 30. If she got 2 marks more in Mathematics and 3 marks less in English, the product of her marks would have been 210. Find her marks in the two subjects.

63. The diagonal of a rectangular field is 60 metres more than the shorter side. If the longer side is 30 metres more then the shorter side, find the sides of the field.

64. The difference of squares of two numbers is 180. The square of the smaller number is 8 times the larger number.Find the two numbers.

65. A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, if would have taken 1 hour less for the same

journey. Find the speed of the train.

66. Two water taps together can fill a tank in $9\dfrac{3}{8}$ hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.

67. An express train takes 1 hour less than a passenger train to travel 132 km between Mysore and Bangalore (without taking into consideration the time they stop at intermediate stations). If the average speed of the express train is 11 km/hr more then that of the passenger train, find the average speed of the two trains.

68. Sum of the areas of two squares is $468\ m^2$ If the difference of their perimeters is 24m, find the sides of the two squares.

69. $S = ut - \dfrac{1}{2}gt^2$ is a formulat which given the distance S in meters travelled by a ball from the thrower's hadns if it is thrown upwards with an initial velocvity of um/s after a time of t seconds. G is the acceleration due to the gravity and is $9.8m/s^2$ If a ball is thrown upwards at $14m/s$ how high has it gone after 1 second?

70. $S = ut - \dfrac{1}{2}gt^2$ is a formulat which given the distance S in meters travelled by a ball from the thrower's hadns if it is thrown upwards with an initial velocvity of $14m/s$ after a time of t seconds. G is the acceleration due to the gravity and is $9.8m/s^2$

How long does it take for the ball to reach a height of 5 meters?

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71. $S = ut - \dfrac{1}{2}gt^2$ is a formulat which given the distance S in meters travelled by a ball from the thrower's hadns if it is thrown upwards with an initial velocvity of $14m/s$ after a time of t seconds. G is the acceleration due to the gravity and is $9.8m/s^2$

How long does it take for the ball to reach a height of 5 meters?

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72. If a polygon of 'n' sides has $\dfrac{1}{2}n(n-3)$ diagonals. How many sides will a polygon having 65 diagonals ? Is there a polygon with 50 diagonals?

73. Find the discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$, and hence find the nature of its roots.

74. A pole has to be erected at a point on the boundary of a circular park of diameter 13 metres in such a way that the differences opposite fixed gates A and B on the boundary is 7 metres. Is it possible to do so ? If yes, at what distances from the two gates should the pole be erected ?

75. Find the discriminant of the equation $3x^2 - 2x + \dfrac{1}{3} = 0$ and hence find the nature of its roots. Find them, if they are real.

76. Explain the benefits of evaluating the discriminant of a quadratic equation before attempting to solve it. What does its value signifies?

77. Write three quadratic equations one having two distinct real solutions, one having no real solution and one having exactly one real solution.

78. Find the nature of the roots of the following quadratic equations. If real roots exist, find them.

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

79. Find the nature of the roots of the following quadratic equations. If real roots exist, find them.

$$3x^2 - 4\sqrt{3}x + 4 = 0$$

80. Find the nature of the roots of the following quadratic equations. If real roots exist, find them.

$$2x^2 - 6x + 3 = 0$$

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81. Find the values of k for each of the following quadratic equations so that they have two equal roots.

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

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82. Find the values of k for each of the following quadratic equations so that they have two equal roots.

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

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83. Is it possible to desigh a rectangular mango grove whose length is twice its breadth, and the area is 800 m^2 ? If so find its length and breadth.

84. The sum of the ages of two friends is 20 years. Four years ago,the product of their ages in years was 48. Is the above situation possible ? If so, determine their present ages

85. Is it possible to desigh a rectangular park of perimeter 80m and area $400m^2$? If so, find its length and breadth.

86. Some points are plotted on a plane. Each point is joined with all remaining points by line segments. Find the number of points if the number of line segments are 15.

87. A two digit number is such that the product of its digits, is 8. When 18 is added to the number, they interchange their places. Determine the number.

88. A piece of wire 8m in length is cut into two pieces and each piece is bent into a squares. Where should the cut in the wire be made if the sum of the areas of these squares is to be 2 m^2?

89. Vinay and Praveen working together can paint the exterior of a house in 6 days. vinay by himself can complete the job in 5 days less than Praveen. How long will it take Vinay to complete the job?

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90. Show that the sum of roots of a quadratic equation $ax^2 + bx + c = 0$ is $\dfrac{-b}{a}$

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91. Show that the product of the roots of a quadratic equation $ax^2 + bx + c = 0 (a \neq 0)$ is $\dfrac{c}{a}$.

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92. The denominator of a fraction is one more than twice the numerator. If the sum of the fraction and its reciprocal is $2\dfrac{16}{21}$, find the fraction.

93. Check whether the following are quadratic equations or not.

$(x+2)^2 = 3(x-4)$

94. Check whether the following are quadratic equations or not.

$x^2 - 3x = -4(2-x)$

95. Check whether the following are quadratic equations or not.

(x-1)(x+2)= (x+1)(x+3)

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96. Check whether the following are quadratic equations or not.

$$(x - 3)^2 = x^2 + 5x + 6$$

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97. Check whether the following are quadratic equations or not.

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

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98. Represent the folloiwng situations in the form of quadratic equations.

The area of rectangular plot is $150m^2$. The length of the plot is two more than thrice its breadth. We have to find the length and breadth of the plot.

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99. Represent the folloiwng situations in the form of quadratic equations.

The product of the consecutive positive integers is 462. We need to find the intergers.

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100. Represent the folloiwng situations in the form of quadratic equations.

Bhuvan's mother is 25 years older than him. Their product of their ages after 4 years will be 350 years. We need to find Bhuvan's present age.

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101. Find the roots of the following quadratic equations by factorisation

$x^2 - 6x + 5 = 0$

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102. Find the roots of the following quadratic equations by factorisation

$$2x^2 - 7x + 6 = 0$$

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103. Find the roots of the following quadratic equations by factorisation

x(x+7) = -12

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104. Find the roots of the following quadratic equations by factorisation

$$3x^2 + 7x - 6 = 0$$

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105. Find the roots of the following quadratic equations by factorisation

$x^2 - 6x + 5 = 0$

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106. Find two numbers whose sum is 10 and product is 24.

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107. Find the consecutive positive integers, sum of whose squares is 145.

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108. The base of the right angle is 7 cm more than its altitude. If the hypotenuse is 13cm, find the other two sides.

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109. Find the dimensions of a rectangle whose perimeter is 30 metres and whose area is 50 square meters.

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110. find the roots of the folowing quadratic equations, if they exist, by the method of the completing the square.

$x^2 + 5x = 4$

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111. find the roots of the folowing quadratic equations, if they exist, by the method of the completing the square.

$4x^2 + 6x = 3$

112. Find the values of k for $3x^2 + kx + 4 = 0$ equation have two equal roots.

113. Find the values of p for $4x^2 - px + 7 = 0$ equation have two equal roots.

114. In a class test the sum of Kishore's marks in Mathematics and English is 30. If he got 2 marks more in Mathematics an 3 marks less in English. The product of his marks would have been 210. Find his marks.

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115. In a class test the sum of meena's marks in Social and Hindi is 40. If he got 3 marks more in Social and 4 marks less in Hindi. The product of his marks would have been 270. Find his marks.

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116. Find the roots of $6x^2 - x - 2 = 0$.

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117. The roots of (7x-1)(2x+3)=0.

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118. If the sum of squares of two consecutive positive even numbers is 100 then find them.

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119. The discriminant of $5x^2 - 3x - 2 = 0$ is...

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120. The nature of the roots of a quadratic equation $4x^2 - 12x + 9 = 0$ is....

▶

121. The roots of the Q.E. $\left(x - \dfrac{1}{3}\right)^2 = 9$

122. The roots of the quadratic equation $\dfrac{x^2 - 8}{x^2 + 20} = \dfrac{1}{2}$ are...

123. The roots of $2x^2 - x + \dfrac{1}{8} = 0$ are...

124. If y(y+y) = 12 then y=?

125. Find the equations with roots 9 and 1.

126. If α, β are the roots of $x^2 - yx + 3 = 0$ the find the value of $\alpha^2 + \beta^2$.

127. If $\dfrac{1}{x-2} + \dfrac{2}{x-1} = \dfrac{6}{x}$ then find the value of x.

128. In right angle triangle $\triangle ABC$ AB = 4, AC= 5 then find the value of BC.

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129. If $x^2 - 4x + 3 = 1$ then find the value of x.

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130. The sum of a number and its recip- rocal is $\dfrac{5}{2}$ then the number is

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131. The roots of a quadratic equation $\left(\sqrt{2}x + 3\right)\left(5x - \sqrt{3}\right) = 0$ are.....

132. A piece of wire 8m in length is cut into two pieces and each piece is bent into a squares. Where should the cut in the wire be made if the sum of the areas of these squares is to be 2 m^2?

133. For what positive value of x the $9x^2 - 81 = 0$.

134. If α, β are the roots of $32x^2 + 3x - 7 = 0$ then find the value of $\dfrac{\alpha^2 + \beta^2}{\alpha\beta}$.

135. Form a quadratic equation from

$$x^3 - 4x^2 - x + 1 = (x - 2)^3 =$$