



MATHS

BOOKS - CHETAN MATHS (TAMIL ENGLISH)

QUADRATIC EQUATIONS

Practice Set 2 1

1. Write any two quadratic equations.



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2. Decide which of the following are quadratic equations :

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



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3. Decide which of the following are quadratic equations :

$$y^2 = 5y - 10$$



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4. Decide which of the following are quadratic equations :

$$y^2 + \frac{1}{y} = 2$$

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5. Decide which of the following are quadratic equations :

$$x + \frac{1}{x} = -2$$

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6. Decide which of the following are quadratic equations :

$$(m + 2)(m - 5) = 0$$



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7. Decide which of the following are quadratic equations :

$$m^3 + 3m^2 - 2 = 3m^3$$



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8. Write the following equatratic equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

$$2y = 10 - y^2$$



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9. Write the following equations in the form of $ax^2 + bx + x = 0$, then write the values of a,b,c for each equation.

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



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10. Write the following equations in the form of $ax^2 + bx + c = 0$, then write the values of a,b,c for each equation.

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



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11. Write the following equatrac equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

$$3m^2 = 2m^2 - 9$$



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12. Write the following equatrac equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

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



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13. Write the following equatrac equations in the form $ax^2 + bx + c = 0$. Write the value of a, b, c, for each equation.

$$x^2 - 9 = 13$$



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14. Determine whether the values given against each of the quadratic equations are the roots of the quadratic equation or not :

$$x^2 + 4x - 5 = 0, x = 1, -1$$



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15. Determine whether the values given against each of the quadratic equation are the roots of the equation.

$$2m^2 - 5m = 0, m = 2, \frac{5}{2}$$



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

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



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17. One of the roots of equation $5m^2 + 2m + k = 0$ is

$$-\frac{7}{5}. \text{ Find the value of 'k'.$$



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Practice Set 2 2

1. Solve the following quadratic equations by factorization.

$$x^2 - 15x + 54 = 0$$



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2. Solve the following quadratic equations by factorization.

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



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3. Solve the following quadratic equations by factorization.

$$2y^2 + 27y + 13 = 0$$



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4. Solve the following quadratic equations by factorization.

$$5m^2 = 22m + 15$$



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5. Solve the following quadratic equations by factorization.

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



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6. Solve the following quadratic equations by factorization.

$$6x - \frac{2}{x} = 1$$



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7. Solve each of the following quadratic equations:

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



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8. Solve the following quadratic equations by factorization.

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



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9. Solve the following quadratic equations by factorization.

$$2m(m-24)=50$$



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10. Solve the following quadratic equations by factorization.

$$25m^2 = -9.$$



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11. Solve the following quadratic equations by factorization.

$$7m^2 = 21m$$



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12. Solve the following quadratic equations by factorization.

$$m^2 - 11 = 0$$



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Practice Set 2 3

1. Solve the following quadratic equations by completing square method :

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



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2. Solve the following quadratic equations by completing square method :

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



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3. Solve the following quadratic equations by completing square method :

$$m^2 - 5m = -3$$



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4. Solve the following quadratic equations by completing the square method.

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

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5. Solve the following quadratic equations by completing square method :

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

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6. Solve the following quadratic equations by completing square method :

$$5x^2 = 4x + 7$$



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Practice Set 2 4

1. Find the values of a,b,c for the following quadratic equations by comparing with standard form :

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



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2. Find the values of a,b,c for the following quadratic equations by comparing with standard form :

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



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3. Find the values of a,b,c for the following quadratic equations by comparing with standard form :

$$y^2 = 7y$$



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4. Solve using formula.

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



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5. Solve the following quadratic equations by using formula method :

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



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6. Solve the following quadratic equations by using formula method :

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



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7. Solve the following quadratic equations by using formula method :

$$5m^2 - 4m - 2 = 0$$



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8. Solve the following quadratic equations by using formula method :

$$y^2 + \frac{1}{3}y = 2$$



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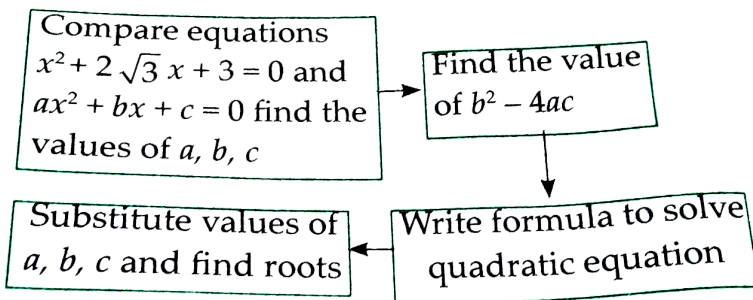
9. Find the roots of the quadratic equations by using the quadratic formula in each of the following

$$5x^2 + 13x + 8 = 0$$



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10. With the help of the flow chart given below solve the equation $x^2 + 2\sqrt{3}x + 3 = 0$ using formula.



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Practice Set 2 5

1. Find the value of discriminant.

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



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2. Find the value of discriminant.

$$2y^2 - 5y + 10 = 0$$



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3. Find the value of discriminant.

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



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4. Determine the nature of roots of the following quadratic equations.

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



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5. Determine the nature of roots of the following quadratic equations.

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



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6. Determine the nature of roots of the following quadratic equations.

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



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7. The roots of the each of the following quadratic equations are real and equal, find k.

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



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8. Find the values of k for which the roots are real and equal in the following equations: $kx(x - 2) + 6 = 0$

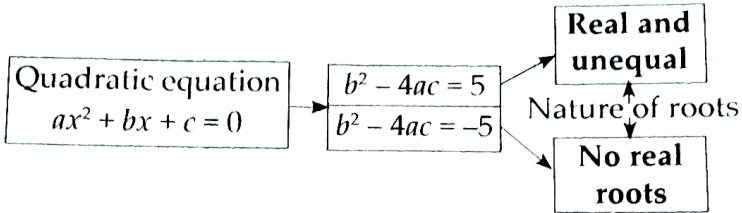
(ii) $x^2 - 4kx + k = 0$



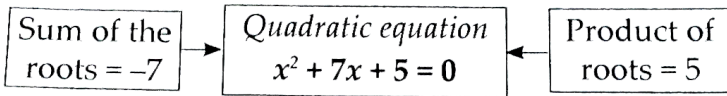
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9. Fill in the gaps and complete.

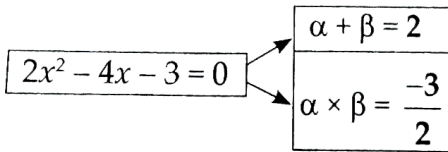
(i)



(ii)



(iii) If α, β are the roots of quadratic equation, then



(i)

$$\alpha \times \beta = \frac{c}{a} = \frac{-3}{2}$$



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10. Sum of the roots of a quadratic equation is double their product. Find k if equation is

$$x^2 - 4kx + k + 3 = 0.$$



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11. α, β are roots of $y^2 - 2y - 7 = 0$ find,

(i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$



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12. Form the quadratic equation from the roots given below.

0 and 4



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13. Form the quadratic equation from the roots given below.

3 and -10



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14. Form the quadratic equation from the roots given below.

$\frac{1}{2}$ and $\frac{-1}{2}$



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15. Form the quadratic equation from the roots given below.

$$2 - \sqrt{5} \text{ and } 2 + \sqrt{5}$$

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Practice Set 2 6

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

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

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

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



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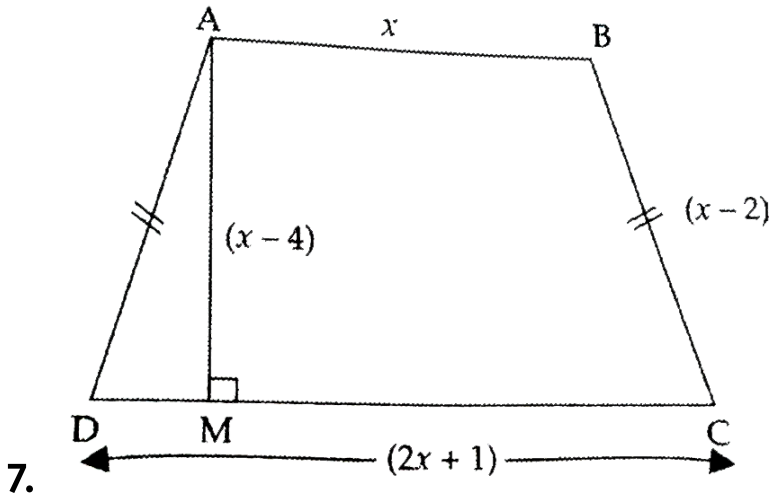
5. Mr. Kasam runs a small business of making earthen pots. He makes certain number of pots on daily basis. Production cost of each pot is Rs. 40 more than 10 times total number of pots, he makes in one day. If production cost of all pots per day is Rs. 600, find production cost of one pot and number of pots he makes per day.



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6. Suyash 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.

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In the above fig. $\square ABCD$ is a trapezium $AB \parallel CD$ and

its area is 33 cm^2 . From the information given in the figure, find the lengths of all sides of the \square ABCD. Fill in the empty boxes to get the solution.



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8. Pintu takes 6 days more than those of 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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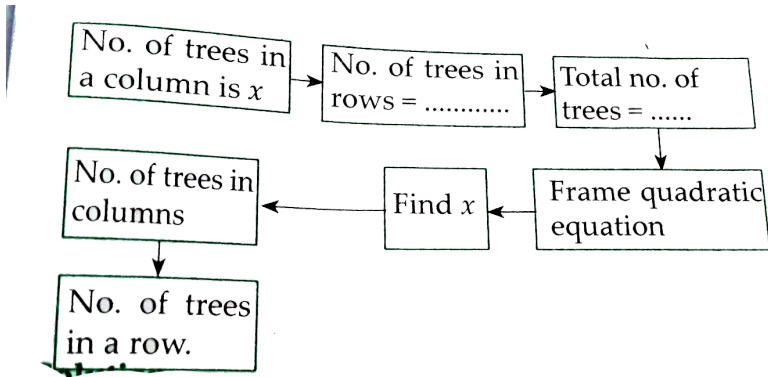
9. Pratik takes 8 hours to travel 36 km downstream and return to same spot. The speed of boat in still water is 12km/hr. Find the speed of the water current.



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10. In the orange garden of Mr. Madhusudan there are 150 orange trees. The number of trees in each rows are 5 more than that in each column. Find the number of trees in each rows and each column with the help

of following flow chart.



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Problem Set 2

1. Which of the following are quadratic equations?

$$x^2 + 2x + 11 = 0$$

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2. Which of the following are quadratic equations?

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



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3. Which of the following are quadratic equations?

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



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4. One of the roots of quadratic equation

$$2x^2 + kx - 2 = 0$$
 is -2, find k.



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5. Solve the following quadratic equations:

$$(2x + 3)^2 = 25$$



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6. Solve the following quadratic equations:

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



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7. Solve the following quadratic equations :

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



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8. Solve the following quadratic equations :

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



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9. Solve the following quadratic equations :

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



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10. Solve the following quadratic equations :

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



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11. Find the value of discriminant for each of the following equations.

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



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12. Find the value of discriminant for each of the following equations.

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



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13. Find the value of discriminant for each of the following equations.

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



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14. Determine the nature of roots for each of the quadratic equations.

$$3x^2 - 5x + 7 = 0$$



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15. Determine the nature of roots for each of the quadratic equations.

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



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16. Determine the nature of roots for each of the quadratic equations.

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



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

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18. Two roots of quadratic equations are given, frame the equation.

10 and -10

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19. Two roots of quadratic equations are given, frame the equation.

$$1 - 3\sqrt{5} \quad \text{and} \quad 1 + 3\sqrt{5}$$



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20. Two roots of quadratic equations are given, frame the equation.

$$0 \quad \text{and} \quad 7$$



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



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22. Find quadratic equation such that its roots are square of sum of the roots and square of difference of the roots of equation $2x^2 + 2(p + q)x + p^2 + q^2 = 0$



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23. The difference between the squares of two numbers is 120. The square of the smaller number is

twice the greater number. Find the numbers.



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24. Mukund possesses RS 50 more than what Sagar possesses. The product of the amount they have is numerically RS 15000. Find the amount each has.



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25. 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.



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26. Mr. Dinesh owns an agricultural farm at village Talvel. The length of the farm is 10 meter more than twice the breadth. In order to harvest rain water, he dug a square shape 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 length and breadth of the farm and of the pond.



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27. A tank fills completely in 2 hours if both the taps are open. If only one of the taps is open at the 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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28. Which one is the quadratic equation ?

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

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

C. $n-1=2n$

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

Answer: B

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29. 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. $2x - x^2 = x^2 + 5$

Answer: A

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30. The roots of $x^2 + kx + k = 0$ are real and equal, find k.

A. 0

B. 4

C. 0 or 4

D. 2

Answer: C



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31. Which of the following is the value of the discriminant for $\sqrt{2}x^2 - 5x + \sqrt{2} = 0$?

A. -5

B. 17

C. $\sqrt{2}$

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

Answer: B



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32. Which of the following quadratic equations has roots 3,5 ?

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

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

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

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

Answer: B



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33. Out of the following equations, find the equation having the sum of its roots -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: D



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34. $\sqrt{5}m^2 - \sqrt{5}m + \sqrt{5} = 0$ which of the following statement is true for this 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: C



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35. One of the roots of equation $x^2 + mx - 5 = 0$ is

2 find m.

A. -2

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

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

D. 2

Answer: C



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36. The sum of roots $(\alpha + \beta) = \dots\dots\dots$ A) $\frac{-b}{a}$ B) $\frac{b}{a}$ C)

$\frac{-c}{a}$ D) $\frac{c}{a}$

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

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

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

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

Answer: A



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37. The roots of a quadratic equation $y^2 - 16y + 63 = 0$ are

A. -9 and -7

B. -9 and 7

C. 9 and -7

D. 9 and 7

Answer: D



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38. If the roots of a quadratic equations are real and equal, then Δ must be A)zero B)greater than zero C)less than zero D)equal to one

A. zero

B. greater than zero

C. less than zero

D. equal to one

Answer: A



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39. What is the value of k , If one root of the quadratic equation $kx^2 - 7x + 12 = 0$ is 3

A. -1

B. 1

C. 3

D. none of these

Answer: C



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40. If one root of quadratic equations is $1 - \sqrt{3}$ then the other root is

A. $1 - \sqrt{3}$

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

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

D. $1 + \sqrt{3}$

Answer: D



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41. 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: B



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42. The value of discriminant of the equation

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

A. -4

B. -3

C. 3

D. 4

Answer: B



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43. In a quadratic equation with roots α and β where $\alpha + \beta = -4$ 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. $x^2 - 4x + 1 = 0$

Answer: B



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44. The standard form of quadratic equation

$$x - \frac{5}{x} = 3x - 7 \text{ is}$$

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

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

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

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

Answer: C



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45. What is the nature of roots of quadratic equations

$$9x^2 - 12x + 4 = 0?$$

A. real and unequal roots

B. equal

C. unequal

D. both A and B

Answer: D



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46. Three times the square of natural number is 363 is written in the mathematical equation form as

A. $x^2 + 3 = 363$

B. $x^2 - 3 = 363$

C. $3x^2 = 363$

D. $\frac{x^2}{2} = 363$

Answer: C



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47. Which of the following is not a quadratic equatin?

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

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

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

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

Answer: C



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48. The product of the roots $(\alpha \times \beta) = \dots\dots\dots$

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

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

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

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

Answer: D



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49. $\alpha^3 + \beta^3 = \dots\dots\dots$

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: A



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50. If one root of quadratic equation is $5 + \sqrt{5}$, then the product of roots is

- A. 30
- B. -20
- C. 20
- D. 125

Answer: C



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Problems For Practice

1. If $x=9$ is one root of the quadratic equation $x^2 - 11x + k = 0$, then find the value of k .



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



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3. Determine whether the given values of x are the roots of given quadratic equation $6x^2 - x - 2 = 0$,

$$x = \frac{-1}{2}, x = 5$$



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4. which of the following are quadratic equations?

(i) $x - \frac{5}{x} = 3x - 9$ (ii) $(x + 3)(x - 4) = 0$

(iii) $\frac{5}{x} - 3 = x^2$ (iv) $n^3 - n + 4 = n^3$

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



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5. write the quadratic equations in $ax^2 + bx + c = 0$

form and find the values of a,b,c.

(i) $m(m - 7) = 0$ (ii) $\frac{x^2 - 7}{x} = 7$

(iii) $x - \frac{6}{x} = 5$ (iv) $(x + 5)(x - 11)$



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6. Solve the following quadratic equations by factorisation method :

$$x^2 - 5x - 36 = 0$$



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

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

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9. Find the value of discriminant for each of the following quadratic equations:

(i) $x^2 + 4x + 4 = 0$ (ii) $x^2 + 4x + 1 = 0$

(iii) $3x^2 + 2x + 1 = 0$

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10. Determine the nature of roots of the following quadratic equations from their discriminants:

$$x^2 - 8x + 16 = 0$$

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11. Form the quadratic equation if its roots are "(i) 0 and -4 "

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12. Find the value of k for which given quadratic equations are real and equal roots.

(i) $k^2x^2 - 2(k - 1)x + 4 = 0$ (ii) $4x^2 - 3kx + 1 = 0$



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



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



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



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



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18. The sum of the squares of two consecutive even natural numbers is 100. Find the numbers.



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19. For doing some work, Ganesh takes 10 days more than John. If both work together, they will complete the work in 12 days. Find the number of days if Ganesh work alone?



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20. 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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21. 3 वर्ष पूर्व रहमान कि आयु (वर्षों में) का वयुक्तक्रम और अब से 5 वर्ष पश्चात आयु के वयुक्तक्रम का योग $\frac{1}{3}$ है । उसकी वर्तमान आयु ज्ञात कीजिए ।



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Assignment

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

A. -2

B. 2

C. 34

D. -4

Answer:



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

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

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

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

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6. If $\alpha = -5$ and $\beta = 9$, then form the quadratic equation.

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

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8. Solve the following quadratic equation by formula

method: $x^2 + 6x + 5 = 0$



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9. If α and β are the roots of quadratic equation

$x^2 + 5x - 1 = 0$ then, find (i) $\alpha^3 + \beta^3$ (ii) $\alpha^2 + \beta^2$



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10. For doing some work, Pintu takes 6 days more than

Nishu. If both work together, they complete the work

in 4 days. Find the number of days if Pintu and Nishu work alone.

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

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12. Pratik 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.



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