



MATHS

BOOKS - ARIHANT PUBLICATION

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QUADRATIC EQUATIONS

Solved Examples

1. The roots of the equation

$$3a^2x^2 + 8abx + 4b^2 = 0, \text{ where } a \neq 0 \text{ are}$$

A. $\frac{3b}{2a}, \frac{b}{3a}$

B. $\frac{-2b}{3a}, -\frac{2b}{a}$

C. $\frac{b}{3a}, \frac{2b}{3a}$

D. $\frac{2a}{b}, \frac{4b}{a}$

Answer: B



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2. The roots of the equation

$$2x^2 + 14x + 9 = 0 \text{ are}$$

A. $\frac{6 + \sqrt{5}}{3}, \frac{14}{9}$

B. $\frac{7x\sqrt{13}}{3}, \frac{\sqrt{7} + 31}{4}$

C. $\frac{11}{5}, \frac{\sqrt{3} + 5}{3}$

D. $\frac{-7 + \sqrt{31}}{2}, \frac{-7 - \sqrt{31}}{2}$

Answer: D



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3. The solutions of the quadratic equation

$x^4 - 26x^2 + 25 = 0$ are

A. 5,3

B. $-1, 4$

C. $\pm 1, \pm 5$

D. $-5, 1$

Answer: C



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4. If $\sqrt{2x^2 - 2x + 1} - 2x + 3 = 0$ then solutions are

A. (4, 1)

B. (3, 1)

C. (2, 4)

D. (4, 3)

Answer: A



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5. The solutions of the equation

$$\sqrt{4-x} + \sqrt{x+9} = 5 \text{ are}$$

A. 0, - 10

B. 0, - 5

C. - 4, - 6

D. 0, 10

Answer: B



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6. In the equation $2^{2y+3} = 65(2^y - 1) + 57$

then, solutions are

A. 4, - 3

B. - 3, - 3

C. 3, - 3

D. 3, 3

Answer: C



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Exam Booster For Cracking Exam

1. The solution set for equation $4x^2 - 6x = 0$,

when $x \in N$ is

A. $\{0, 1\}$

B. $\{1, 2\}$

C. $\{0\}$

D. $\{\phi\}$

Answer: D



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2. The values of x in the equation

$$a^2b^2x^2 - (a^2 + b^2)x + 1, a \neq 1, b \neq 0 \text{ is}$$

A. $\frac{1}{a^2}$

B. $\frac{1}{b^2}$

C. $\frac{1}{a^2}, \frac{1}{b^2}$

D. None of these

Answer: C



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3. The value of 'a' for which the equation

$ax^2 - 2\sqrt{5}x + 4 = 0$ has equal roots, is

A. $\frac{5}{4}$

B. $\frac{4}{5}$

C. $-\frac{5}{4}$

D. $-\frac{5}{3}$

Answer: A



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4. If the equation

$$(1 + m^2)x^2 + 2mcx + (c^2 - a^2) = 0 \quad \text{has}$$

equal roots, prove that $c^2 = a^2(1 + m^2)$.

A. $a^2 = c^2(1 - m^2)$

B. $c^2 = a^2(1 - m^2)$

C. $a^2 = c^2(1 + m^2)$

D. $c^2 = a^2(1 + m^2)$

Answer: D



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5. If one solution of $3x^2 = 8x + 2k + 1$ is seven times the other, find the other solution of k

A. $\frac{5}{3}$

B. $-\frac{5}{3}$

C. $\frac{2}{3}$

D. $-\frac{3}{2}$

Answer: B



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6. The quadratic equation ,whose roots are

$$\frac{4 + \sqrt{7}}{2} \text{ and } \frac{4 - \sqrt{7}}{2} \text{ is}$$

A. $4x^2 + 16x + 9 = 0$

B. $4x^2 - 16x - 9 = 0$

C. $4x^2 - 16x + 9 = 0$

D. $4x^2 + 16x - 9 = 0$

Answer: C



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7. If α and β are roots of the equation $x^2 - 8x + p = 0$ and $\alpha^2 + \beta^2 = 40$, then p is equal to

A. 12

B. 10

C. 9

D. 11

Answer: A



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

A. 5

B. -5

C. ± 5

D. ± 4

Answer: C



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9. If α and β are the roots of the equation $ax^2 + bx + c = 0$, then an equation whose roots are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ is

A. $bx^2 + ax + c = 0$

B. $ax^2 - bx + c = 0$

C. $cx^2 + ax + b = 0$

D. $cx^2 + bx + a = 0$

Answer: D



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10. If α and β are the roots of a quadratic equation such that $\alpha + \beta = 24$ and $\alpha - \beta = 8$, then the equation is

A. $x^2 - 24x - 128 = 0$

B. $x^2 + 24x + 128 = 0$

C. $x^2 + 24x - 128 = 0$

D. None of these

Answer: D



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11. The two consecutive positive odd integers ,the sum of whose squares is 130 are

A. 7,9

B. 9,6

C. 3,-5

D. None of these

Answer: A



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12. The side (in cm) of a right triangle are $x - 1$, x and $x + 1$. The area of triangle is

A. 5cm^2

B. 3cm^2

C. 6cm^2

D. None of these

Answer: C



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13. Divide 16 into two parts such that twice the square of the larger part exceeds the square of the smaller part by 164.

A. 58

B. 6

C. 10

D. None of these

Answer: C



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14. An equation equivalent to the quadratic equation $x^2 - 6x + 5 = 0$ is

A. Yes

B. No

C. Cannot say

D. None of these

Answer: A



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15. The roots of the equation $x^2 + px + q = 0$ are 1 and 2. The roots of the equation $qx^2 - px + 1 = 0$ will be

A. $-\frac{1}{2}, -1$

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

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

D. None of these

Answer: A



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16. If the roots of the quadratic equation $px^2 + qx + r = 0$ are reciprocal to each other, then the relation between p and r is

A. $r \neq p$

B. $r = p$

C. $r = q$

D. None of these

Answer: B



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17. Sum of roots is -1 and sum of their reciprocals is $\frac{1}{6}$, then the equation is

A. $x^2 - x - 6 = 0$

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

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

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

Answer: D



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18. The value of x for which $2^{x+4} - 2^{x+2} = 3$ is

A. -2

B. -3

C. 0

D. 5

Answer: A



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19. For what value of k will the equation

$$\frac{x^2 - bx}{ax - c} = \frac{k - 1}{k + 1} \text{ have roots reciprocal to}$$

each other ?

A. $\frac{c - 1}{c + 1}$

B. $\frac{c + 1}{c - 1}$

C. $\frac{1}{c + 1}$

D. $\frac{1}{c - 1}$

Answer: B



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20. If α and β be the zeros of the polynomial

$ax^2 + bx + c$, then the value of $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}}$

A. $\sqrt{a/b}$

B. $\sqrt{b/a}$

C. \sqrt{ab}

D. None of these

Answer: B



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21. The condition that one root of $px^2 + qx + r = 0$ may be double of the other is

A. $q^2 = 9rp$

B. $2q^2 = 9rp$

C. $q^2 = rp$

D. None of these

Answer: B



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22. If α and β are the roots of $2x^2 - 6x + 3 = 0$, then the value of $\left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right) + 3\left(\frac{1}{\alpha} + \frac{1}{\beta}\right) + 2\alpha\beta$ is

A. 13

B. 4

C. 6

D. 3

Answer: A



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23. Find the solution of the equation

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

A. (4, 5)

B. (4, $-13/2$)

C. (5, $-13/2$)

D. None of these

Answer: A



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24. In a group of children ,each child gives a gift to every other child ,If the number of gifts is 132 ,then the number of children are

A. 11

B. 12

C. 14

D. None of these

Answer: B



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25. Out of a certain number of Sarasbird one - fourth the number are moving about in lotus plants , $\frac{1}{9}$ th coupled with $\frac{1}{4}$ th as well as 7 times the square root of the number ,move on a hill , 56 birds remain in Vakula tree .Then ,the total number of birds are

A. 756

B. 24

C. 124

D. 576

Answer: D



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