MATHS

BOOKS - MCGROW HILL EDUCATION MATHS (HINGLISH)

THEORY OF QUADRATIC EQUATION

Illustrative Example

1. If one of the roots of the real quadratic equation is $(2-\sqrt{3})$, the equation is

Watch Video Solution

2. If α and β are the roots of $4x^2 + 3x + 7 = 0$, the value of $\frac{1}{\alpha^3} + \frac{1}{\beta^3}$ is

Watch Video Solution

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

Watch Video Solution

4. If $\alpha \neq \beta$ but $\alpha^2 = 5\alpha - 3, \beta^2 = 5\beta - 3$, then find the equation whose roots are $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$.

Watch Video Solution

5. Two candidates attempt to solve a quadratic equation of the form $ax^2 + bx + c = 0$. One starts with a wrong value of b and find the roots to be 2 and 6. The other starts with the wrong values of c and find the roots to be +2,-9. The correct roots of the equation are

View Text Solution

6. If one root of $5x^2 + 13x + k = 0$ be the reciprocal of the other root then the value of k is

Watch Video Solution

7. . For what value of m will the equation $\frac{x^2 - bx}{ax - c} = \frac{m - 1}{m + 1}$ have roots equal in magnitude but opposite in sign?

Watch Video Solution

8. If one root of the equation $ax^2 + bx + c = 0$ is the square of the other , then

Watch Video Solution

9. The set of values of p for which the roots of the equation $3x^2 + 2x + p(p-1) = 0$ are of opposite signs is :

Watch Video Solution

10. If $\left(x^2 - 3x + 2\right)$ is a factor of $x^4 - px^2 + q = 0$, then the values of p and q are

Watch Video Solution

11. The roots of the equation

$(b-c)x^2+(c-a)x+(a-b)=0$

Watch Video Solution

12. If the ratio of the roots of $x^2+px+q=0$ be equal to the ratio of the roots of $x^2+lx+m=0$, then

Watch Video Solution

Multiple Choice Questions

1. If α and β are the roots of the equation $x^2 + x + 1 = 0$, the equation whose roots are α^{19} and β^7 is

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

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

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

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

Answer: D

Watch Video Solution

2. if α and β are the roots of $ax^2 + bx + c = 0$ then the value of $\left\{ \frac{1}{a\alpha + b} + \frac{1}{a\beta + b} \right\}$ is

A. $\frac{a}{bc}$

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

C. $\frac{c}{ab}$

D. None

Answer: B

Watch Video Solution

3. If α and β are the roots equation $ax^2 - 2bx + c = 0, then \alpha^3\beta^3 + \alpha^2\beta^3 + \alpha^3\beta^2 =$

(A) $\frac{c^2}{a^3}(c + 2b)$ (B) $\frac{c^2}{c^3}(c - 2b)$ (C) $b\frac{c^2}{a^3}$ (D) none of these

A. $\frac{c^2(c + 2b)}{a^3}$

B. $\frac{bc^2}{a^3}$

C. $\frac{c^2}{a^3}$

D. None

Answer: A

Watch Video Solution

4. Ramesh and Mahesh solve an equation. In solving Ramesh commits a mistake in constant term and find the roots are 8 and 2. Mahesh commits a mistake in the coefficient of x and find the roots -9 and -1. The corret roots are

A. $-8, 2$

B. 9,1

C. 9,-1

D. $-8, -2$

Answer: B

Watch Video Solution

5. If 8, 2 are roots of the equation$x^2 + ax + \beta$and 3, 3 are roots of $x^2 + \alpha x + b = 0$ then roots of the equation $x^2 + ax + b = 0$ are

A. 8,-1

B. $-9, 2$

C. $-8, -2$

D. $9, 1$

Answer: D

Watch Video Solution

6. Q. Two students while solving a quadratic equation in x, one copied the constant term incorrectly and got the roots as 3 and 2. The other copied the constant term and coefficient of x^2 as -6 and 1 respectively. The correct roots are :

A. 3,-2

B. $-3, 2$

C. $-6, \ -6$

D. $6, \ -1$

Answer: D

Watch Video Solution

7. If $\alpha + \beta = 3, \alpha^3 + \beta^3 = 7$, then α and β are the roots of

A. $3x^2 + 9x + 7 = 0$

B. $9x^2 - 27x + 20 = 0$

C. $2x^2 - 6x + 15 = 0$

D. None of these

Answer: B

Watch Video Solution

8. If α, β are the roots of $ax^2 + 2bx + c = 0$ and $\alpha + \delta, \beta + \delta$ be those of $Ax^2 + 2Bx + C = 0$ then prove that $\frac{b^2 - ac}{B^2 - AC} = \left(\frac{a}{A}\right)^2$

A. $\left(\frac{a}{A}\right)^2$

B. $\left(\frac{A}{a}\right)^2$

C. 0

D. 1

Answer: A

Watch Video Solution

9. The condition that the roots of the equation $ax^2 + bx + c = 0$ be such that one root is n times the other is

A. $na^2 = bc(n+1)^2$

B. $nb^2 = ca(n+1)^2$

C. $nc^2 = ab(n+1)^2$

D. None of these

Answer: B

View Text Solution

10. If the roots of the equation $ax^2 + bx + c = 0$ are in the ratio $m : n$ then

A. $mna^2 = (m + n)c^2$

B. $mnb^2 = (m + n)ac$

C. $mnb^2 = (m + n)2ac$

D. None of these

Answer: C

Watch Video Solution

11. If one root of the equation $x^2 - x - k = 0$ be square of the other, then k is equals to

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

B. $3 \pm \sqrt{2}$

C. $2 \pm \sqrt{5}$

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

Answer: C

Watch Video Solution

12. 35. If the sum of the roots of $ax^2 + bx + c = 0$ be equal to sum of the squares, then- (A) 2ac = ab + b2 (B) 2ab-bc + c2 c (D) None of these (D) None of these (C) 2bc -ac+2

A. $ab + b^2 = 2ac$

B. $bc + c^2 = 2ab$

C. $ac + c^2 = 2bc$

D. None of these

Answer: A

Watch Video Solution

13. If $\sin\theta$ and $\cos\theta$ are the roots of the equation $lx^2 + mx + n = 0$, then (A) $l^2 - m^2 + 2\ln = 0$ (B) $l^2 + m^2 + 2\ln = 0$ (C) $l^2 - m^2 - 2\ln = 0$ (D) $l^2 + m^2 - 2\ln = 0$

A. $lx^2 - m^2 + 2\ln = 0$

B. $l^2 + m^2 + 2\ln = 0$

C. $l^2 - m^2 - 2\ln = 0$

D. $l^2 + m^2 - 2\ln = 0$

Answer: A

Watch Video Solution

14. If one root of the equation $ix^2 - 2(i+1)x + (2-i) = 0$ is 2-i, then the other root is

A. $-i$

B. $2+i$

C. i

D. $2-i$

Answer: A

Watch Video Solution

15. Find the number of real roots of the equation $(x-1)^2+(x-2)^2+(x-3)^2=0$.

A. 2

B. 1

C. 0

D. 3

Answer: C

Watch Video Solution

16. if p and q are non zero constants, the equation $x^2 + px + q = 0$ has roots α and β then the equation $qx^2 + px + 1 = 0$ has roots

A. α and $\frac{1}{\beta}$

B. $\frac{1}{\alpha}$ and β

C. $\frac{1}{\alpha}$ and $\frac{1}{\beta}$

D. None of these

Answer: C

 Watch Video Solution

17. The inequality $|2x - 3| < 1$ is valid when x lies in the interval

A. (3,4)

B. (1,2)

C. (-1,2)

D. (-4,3)

Answer: B

Watch Video Solution

18. For the equation $3x^2 + px + 3 = 0, p > 0,$ if one of the root is square of the other, then p is equal to $\frac{1}{3}$ (b) 1 (c) 3 (d) $\frac{2}{3}$

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

B. 1

C. 3

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

Answer: C

Watch Video Solution

19. If the ratio of the roots of $x^2 + px + q = 0$ be equal to the ratio of the roots of $x^2 + lx + m = 0$, then

A. $p^2m = q^2l$

B. $pm^2 = q^2l$

C. $p^2l = q^2m$

D. $p^2m = l^2q$

Answer: D

Watch Video Solution

20. both roots of the equation

$(x-a)(x-b)+(x-b)(x-c)+(x-c)(x-a)=0$

are

A. positive

B. negative

C. real

D. imaginary

Answer: C

Watch Video Solution