



ST. LAWRENCE HIGH SCHOOL



A Jesuit Christian minority Institution

Subject: Mathematics Class-X

Date: 30/01/2021

Worksheet-4

Chapter: Quadratic Equation

Topic- Nature of roots

1. Choose the correct alternative. $1 \times 15 = 15$
- a) If $ax^2 + bx + c = 0$ is a quadratic equation then i) $b \neq 0$ ii) $a \neq 0$ iii) $c \neq 0$ iv) none of this
- b) Find out value of a when one of the roots of the equation $x^2 + ax + 3 = 0$ is 1.
i) -4 ii) 4 iii) 5 iii) -3
- c) Determine the sum and product of 2 roots of the equation $4x^2 - 9x = 100$ are respectively
i) $-9/4$ and -25 ii) $9/4$ and 25 iii) $9/4$ and -25 iv) none of these
- d) If one of the roots of the equation $3x^2 - 10x + 3 = 0$ is $1/3$. Find the other root.
i) 3 ii) -3 iii) 2 iv) 4
- e) The speed of a boat in still water is 8 km/hr. If the boat can go 15 km down stream and 22 km up stream in 5 hrs. Find out speed of the stream.
i) 1.5 km/hr ii) 1.6 km/hr iii) 2 km/hr iv) 2.6 km/hr
- f) Determine the nature of the roots of the equation $2x^2 + x - 2 = 0$
i) real and equal ii) not real iii) real and unequal iv) none of these
- g) Find the values of k when $(3k+1)x^2 + 2(k+1)x + k = 0$ has real and equal roots.
i) -1 and $-1/2$ ii) 1 and $-1/2$ iii) 1 and $1/2$ iv) 2 and 1
- h) If 2 roots of the equation $3x^2 + 8x + 2 = 0$ be α and β , then the value of $(1/\alpha + 1/\beta)$ is
i) -4 ii) 4 iii) $1/2$ iv) -8

- i) The roots of the equation $x^2 + x + 1 = 0$ are i) real and equal ii) real and unequal iii) not real iv) none of these
- j) If 2 roots of the equation $ax^2 + bx + c$ ($a \neq 0$) are reciprocal to each other and opposite in sign. Then $a+c = \underline{\hspace{2cm}}$ i) 0 ii) 1 iii) -1 iv) none of these
- k) If two roots of the equation $x^2 - 22x + 105 = 0$ are α and β , find the value of $(\alpha - \beta)$. i) +8 and -8 ii) 8 iii) 10 iv) none of these
- l) If one of the roots of the equations $x^2 + bx + 12 = 0$ and $x^2 + bx + q = 0$ is 2. Determine the value of q .
i) 2 ii) 16 iii) 12 iv) -12
- m) Find value of k for which the roots of the equation $5x^2 + 13x + k = 0$ are reciprocal of each other.
i) 4 ii) 5 iii) 3 iv) none of these
- n) If 2 roots of the quadratic equation $x^2 + px + q = 0$ are α and β , then express the value of $\alpha^3 + \beta^3$ in terms of p and q
i) $p^3 - 3pq$ ii) $p - 3pq$ iii) $3pq - p^3$ iv) none of these
- o) If 2 roots of the quadratic equation $x^2 + px + q = 0$ are α and β , then express the value of $1/\alpha + 1/\beta$ in terms of p and q
i) $-p/q$ ii) p/q iii) $-q/p$ iv) pq

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