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RISE UP अॅकॅडमी

इयत्ता : 5 वी ते 10 वी

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Class: 10 English / Semi-English (State) | Subject : Algebra | Total Marks: 20

Date: | Chapter: Quadratic Equation | Time: 1 Hr

10th Algebra 20 Marks

Q.1) A) Choose the correct alternative for the following questions [02]

1) Which of the following is not a quadratic equation?

a) $y^2/2 = 2y + 7$ b) $(y - 3)(y + 3) = 0$ c) $6/y - 5 = y$ d) $y - 1 = 7y$

2) The product of the roots $(\alpha \times \beta)$ = ------

a) $\frac{-b}{a}$ b) $\frac{-c}{a}$ c) $\frac{b}{a}$ d) $\frac{c}{a}$

Q.1) B) Solve the following questions [01]

1) Decide given equation is quadratic equation or not : $m^3 + 3m^2 - 2 = 3m^2$

Q.2) A) Complete any one activity [02]

1) Solve the following quadratic equation by factorization : $6x - \frac{2}{x} = 1$

Solution : Multiplying both side by x, we get, $\therefore 6x^2-\square-2=0 \implies (3x-2)\square=0 \therefore x=2/3$ or $x= \square$

2) Classify the following polynomials as linear and quadratic polynomials : $8x - 1$, $3x^2$, $5x^2 + 3x + 2$, $x - 2$

Linear polynomial: [----------] Quadratic polynomial: [----------]

Q.2) B) Solve any One sub question [02]

1) Solve the quadratic equation by factorization : $x^2 - \frac{3x}{10} - \frac{1}{10} = 0$

2) Determine the nature of roots of the equation : $\sqrt{3}\,x^2 + \sqrt{2}\,x - 2\sqrt{3} = 0$

Q.3) A) Complete any One activity [03]

1) Solve the following quadratic equation by completing square method

$x^2 + 9x + 18 = 0$

If $x^2 + 9x + k = (x + a)^2$. Then, $x^2 + 9x + k = x^2 + 2ax + a^2$

$\therefore a = \square$, $k = a^2 = \square$, Now, $x^2 + 9x + 18 = 0$

$\therefore (x + \square)^2 - \left(\frac{81-72}{4}\right) = 0 \implies (x + \square)^2 - \left(\frac{3}{2}\right)^2 = 0$

$\therefore x = \square$ or $x = \square$

2) Solve the following quadratic equation by formula method : $x^2 + 6x + 5 = 0$

Solution: $x^2 + 6x + 5 = 0$; Here, a = □, b = □, c = □

$b^2 - 4ac = □^2 - 4 \times □ \times □ = □$

$\therefore x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} = \frac{-□ \pm \sqrt{□}}{2 \times □} = \frac{-□ \pm □}{□}$

$\therefore x = □$ or $x = □$

Q.3) B) Solve any One sub questions [03]

1) Solve the quadratic equation by formula method : $y^2 + \frac{1}{3}y = 2$

2) Solve the quadratic equation : $\frac{1}{x+5} = \frac{1}{x^2}$

Q.4) Solve any One sub questions [04]

1) A train travels 360 km with uniform speed. The speed of the train is increased by 5 km/hr, it takes 48 minutes less to cover the same distance. Find the initial speed of the train.

2) The difference of roots is 9 and the sum of their square is 13. Find the quadratic equation.

Q.5) Solve any One sub question [03]

1) Solve the following quadratic equation by formula method : $25x^2 + 30x + 9 = 0$

2) The difference between the roots of the equation $x^2 - 13x + k = 0$ is 7 find k.