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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: 40

Date: Time:

10th Algebra 40 Marks

Q.1) A) Choose the correct alternative for the following questions [04]

1) 15, 10, 5, ----- In this AP the sum of first 10 terms is ------

a) -75 b) -125 c) 75 d) 125

2) For an A. P. if d = -----, then the sequence is a constant sequence.

a) 0 b) 1 c) -1 d) 2

3) Which of the following is a quadratic equation?

a) $30 = 5x^2 - x^3$ b) $\frac{1}{x} + 5x = x^2$ c) $x^2\left(\frac{1}{x} - 5\right) = 2x^2$ d) $\frac{2}{x} - 5 = 3x^2$

4) x+ y = 2 and px + py = 2p then these simultaneous equations have,

a) Only one common solution b) no solution c) Infinite number of solution

d) none of these

Q.1) B) Solve the following questions [04]

1) If Dx = -18, D = 3. One of the value of determinants for certain simultaneous equation in x and y. Find x.

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

3) Identify the following sequence are in A.P.? If they are A.P. find common difference : 3, 3 + √2, 3 + 2√2, 3 + 3√2, ---------

4) Write an AP whose first term is a and common difference d is given : a = -3, d = 0

Q.2) A) Complete any two activities [04]

1) Find out how many natural numbers between 1 and 140 are divisible by 4.

From 1 to 140, natural numbers divisible by 4 is 4, 8, ------, 136.

Here, a = □, d = □

$\therefore$ $t_n = a + (n - 1)d$

$\therefore$ □ = 4 + (n – 1) × □ n = □

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

Solution: $m^2 - 25 = 0$ $\therefore$ (.....)^2 - (.....)^2 = 0 $\Longrightarrow$ $\therefore$ (----) (----) = 0 $\therefore$ m = -----

or m = ------

3) Solution: D = $\begin{vmatrix} 4 & -2 \\ 4 & 3 \end{vmatrix}$ =□ $D_m = \begin{vmatrix} -4 & -2 \\ 16 & 3 \end{vmatrix}$ =□

$D_n = \begin{vmatrix} 4 & -4 \\ 4 & 16 \end{vmatrix}$ = □ ∴ m=$\frac{D_m}{D}$=□ and n=$\frac{D_n}{D}$=□

Q.2) B) Solve any Four sub questions [08]

1) Find the value of m. If $\begin{vmatrix} 4 & 5 \\ m & 3 \end{vmatrix}$ = 22

2) Solve the following simultaneous equation: 4x + 3y = 11; 3x + 4y = 10

3) Sum of two numbers is 7 and their difference is 5. Find the numbers.

4) Solve the following simultaneous equation : 2x+3y=7 ; 3x-y=5

5) Solve the following simultaneous equation : 4x + 3y = 11 ; 3x+4y = 10

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

1) Solve the following equations by Crammer's rule: -3x + 14y = 2 and 4x – 14y = 2

Solution: $D = \begin{vmatrix} -3 & 14 \\ 4 & -14 \end{vmatrix} = [(-3 \times -14) - (-4 \times 14)] = -14$

$D_x = \begin{vmatrix} 2 & 14 \\ 2 & -14 \end{vmatrix} =$ □ and $D_y = \begin{vmatrix} -3 & 2 \\ 4 & 2 \end{vmatrix} =$ □

$\therefore x = \frac{D_x}{D} =$ □ and $y = \frac{D_y}{D} =$ □

2) Solve the following equations by Crammer's rule: -3x + 14y = 2 and 4x – 14y = 2

Solution: $D = \begin{vmatrix} -3 & 14 \\ 4 & -14 \end{vmatrix} = [(-3 \times -14) - (-4 \times 14)] = -14$

$D_x = \begin{vmatrix} 2 & 14 \\ 2 & -14 \end{vmatrix} =$ □ and $D_y = \begin{vmatrix} -3 & 2 \\ 4 & 2 \end{vmatrix} =$ □

$\therefore x = \frac{D_x}{D} =$ □ and $y = \frac{D_y}{D} =$ □

Q.3) B) Solve any Two sub questions [06]

1) Solve the following simultaneous equation by Crammer's rule : x + 2y = -1 ; 2x – 3y = 12

2) α and β are roots of y^2- 2y - 7 = 0 find, (i) $\alpha^2+\beta^2$ (ii) $\alpha^3+\beta^3$

3) In an A.P, first term is -5 and last term is 45. If sum of all the numbers in the A.P. is 120, then how many terms are there? What is the common difference?

4) The 11th term and the 21st term of an A.P. are 16 and 29 respectively, then find the 41st term of that A.P.

Q.4) Solve any Two sub questions [08]

1) Anvar saves some amount every month. In first three months he saves Rs. 200, Rs. 250 and Rs. 300 respectively. in which month will he save Rs.1000?

2) If m times of mth term of an A.P. is equal to n times of nth term then show that (m + n) th term of the A.P. is zero.

3) Pratik takes 8 hours to travel 36 km downstream and return to same spot. The speed of boat in still water is 12 km/hr. Find the speed of the water current.

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

1) Find the sum of all numbers from 50 to 350 which are divisible by 6. Hence find the 15th term of that A. P.

2) The sum of the 3rd and 7th terms of an A. P. is 54 and the sum of the 5th and 11th terms is 84. Find the A. P.