

(Assignment #03)

Multiple Choice Questions:

1. G.C.D of $18x^5y^2$ and $12x^3y^4$ is: $(18x^5y^4, 12x^5y^4, 24x^5y^4, 10x^5y^4)$
2. $x^4 + 64$ can be made perfect square by adding $(6x^2, 16x^2, 8x^2, 16x^4)$
3. L.C.M. of $4x^2$ and $5x$ is $(5x^2, 6x, 5x, 20x^2)$
4. _____ should be added to $16a^2 + 8ab$ to make it a perfect square. $(b^3, b^2, 16, 25)$
5. To make $x^2 - 8x$ a perfect square _____ should be added $(49, 16, 25, 64)$

Factorize the following:

1. $ab + amx - bx - mx^2$
2. $6a^2x^2 + 12b^2y^2 - 9b^2x^2 - 8a^2y^2$
3. $x^2 - yz + xy - xz$
4. $ax^3 + ax^2 - bx^2 - bx - cx - c$
5. $3x^2 + 7x - 6$
6. $x^2 + 13xy + 30y^2$
7. $14x^2 - 15xy - 9y^2$
8. $2x^2 + x - 15$
9. $12x^2 + 5x - 2$
10. $12a^2 - 17ab - 5b^2$
11. $25a^2 - 20ab + 4b^2$
12. $16a^2 - 40ab + 25b^2$
13. $x^2y^2 - 16xy + 64$
14. $25a^2 + 9b^2 + 30ab$
15. $64 + 25m^2 + 80m$
16. $1 + 2ab - (a^2 + b^2)$
17. $x^2 + 2x + 1 - y^2$
18. $X^4 + 64$
19. $x^7y - x^5y^3$
20. $4y^4 + 1$
21. $m^7n - n^5m^3$
22. $x^2 + 4x + 4 - y^2$
23. $x^4 + x^2 + 1$
24. $125x^3 + 27y^3$
25. $x^3 - x^2 + 2$
26. $x^9 + y^9$
27. $27x^3 + 8y^3$
28. $x^6 - 64$
29. $x^9 + 1$
30. $x^3 - x - 2y + 8y^3$
31. $27x^3 + 64y^3$
32. $27a^3 - 64b^6 - 1 - 36ab^2$
33. $8a^3 + 1 + b^3 - 6ab$
34. $a^3 + 27b^3 + 8c^3 + 18abc$
35. $a^3 + 8b^3 + c^3 - 6abc$
36. $x^3 - 8y^3 - z^3 - 6xyz$
37. $27a^3 - 8b^3 + 1 + 18ab$
38. $64a^3 - b^3 + 1 + 12ab$

Factorize with the help of remainder theorem:

1. $x^3 + 5x^2 - 2x - 24$
2. $x^3 - 3x^2 + 6x - 4$
3. $x^3 - 6x^2 + 11x - 6$
4. $x^3 - 17x + 26$
5. $2x^3 + 5x^2 - 4x - 3$
6. $x^3 - 6x^2 + 32$

(Assignment #04)

1. If $4x^4 + 12x^3 + 21x^2 + ax + 9$ is a perfect square, then find the value of 'a'.
2. If $4x^4 - 12x^3 + 25x^2 - ax + b$ is a perfect square, then find the value of 'a' and 'b'.
3. If $x^4 + 4x^2 + Q + \frac{8}{x^2} + \frac{4}{x^4}$ is a perfect square, then find the value of 'Q'.
4. What should be added to $x^4 + 4x^3 + 10x^2 + 10x + 5$, so that it becomes a perfect square?
5. What should be subtracted from $x^4 + 2x^3 + 2x^2 + x - 2$, so that it becomes a perfect square?

Simplify:

1. $\frac{1}{a+2b} + \frac{1}{a-2b} + \frac{1}{a^2-4b^2}$
2. $\frac{1}{a-b} - \frac{b}{a^2-b^2} - \frac{a}{a^2+b^2}$
3. $\frac{1}{x-1} + \frac{1}{x+1} - \frac{x+2}{x^2+x+1} - \frac{x-2}{x^2-x+1}$
4. $\frac{x+1}{x-1} \cdot \frac{x^3-1}{x^2-1} \cdot \frac{x-1}{x^2+x+1}$
5. $\frac{1}{x^2-4y^2} + \frac{1}{x-2y} + \frac{1}{x+2y}$
6. $\frac{1}{x^2+1} - \frac{x^4}{x^2+1} + \frac{x^6}{x^2-1} - \frac{1}{x^2-1}$

(Assignment #05)

Multiple Choice Questions:

1. Solution set of $|4x| = -2$ is: $(\{1\}, \{2\}, \{0\}, \{\})$
2. Solution set of $|2x+2| = -3$ is: $(\{1\}, \{2\}, \{0\}, \{\})$

Find the solution set of:

1. $\left|\frac{2x+3}{3}\right| - 2 = 8$
2. $\left|\frac{2x-1}{3}\right| - 2 = 5$
3. $|5x - 3| - 6 = 3$
4. $\left|\frac{x+1}{3}\right| = 1$
5. $\sqrt{25x - 6} = 4\sqrt{x + 3}$
6. $\sqrt{4(3x - 1)} = 2\sqrt{x + 8}$
7. $\sqrt{3x - 5} + 1 = 8$
8. $4\sqrt{x + 1} - 6 = 18$
9. $x^2 + 6x - 40 = 0$
10. $3x^2 - 10x + 2 = 0$
11. $2x^2 - 7x - 15 = 0$
12. $5x^2 - 13x + 6 = 0$
13. $2x^2 - 7x - 15 = 0$
14. $3x^2 - 10x + 6 = 0$
15. $x^2 + 8x + 15 = 0$
16. $6x^2 - 5x - 1 = 0$
17. $2x^2 + 5x + 1 = 0$

Find the solution set graphically:

1. $3x - 2y = 7, 5x + y = 3$
2. $3x + 5y = 21, 4x + y = 11$
3. $x - 3y = -5, 2x + 7y = 3$
4. $8x - y = 29, 2x + y = 11$
5. $x + 2y = 12, 3x - 2y = -4$
6. $x + y = 4, 2x + y = 6$

(Assignment #06)

Multiple Choice Questions:

1. Order of $\begin{bmatrix} 2 & 3 & 4 \end{bmatrix}$ is: $(2 \times 2, 4 \times 4, 1 \times 2, 1 \times 3)$
2. The matrix $\begin{bmatrix} -5 & 8 \end{bmatrix}$ is a ___ matrix. $(\text{scalar, square, rectangular, none of these})$
3. If $A = \begin{bmatrix} 1 & 2 \\ 3 & p \end{bmatrix}$ is a singular matrix, the value of p is: $(5, 6, 1, -1)$
4. Scalar matrix is :
(a) $\begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 0 & 3 \\ 3 & 3 \end{bmatrix}$ (d) $\begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix}$
5. If number of rows and columns is not equal then matrix is called _____ matrix.
a. Square b. rectangular c. row d. column

Find the multiplicative inverse of A and verify that $A \cdot A^{-1} = I$, if:

1. $A = \begin{bmatrix} 2 & -1 \\ -3 & 2 \end{bmatrix}$
2. $A = \begin{bmatrix} 6 & 2 \\ 4 & 3 \end{bmatrix}$
3. $A = \begin{bmatrix} 5 & -3 \\ 2 & -1 \end{bmatrix}$
4. $A = \begin{bmatrix} 2 & 1 \\ 0 & 8 \end{bmatrix}$
5. $A = \begin{bmatrix} 3 & -2 \\ 4 & -5 \end{bmatrix}$
6. $A = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$

Find the solution set of the following equations with the help of Matrices and Cramer's rule:

1. $3x - 2y = 7, 5x + y = 3$
2. $3x + 5y = 21, 4x + y = 11$
3. $x - 3y = -5, 2x + 7y = 3$
4. $8x - y = 29, 2x + y = 11$
5. $x + 2y = 12, 3x - 2y = -4$
6. $x + y = 4, 2x + y = 6$

(Assignment #07)

Multiple Choice Questions:

- The method of finding a relation independent of any variable is called _____.
a. Substitution b. elimination c. proposition d. addition
- The relation obtained after elimination is called _____.
a. Surd b. result c. eliminant d. none of these
- Elimination by application of formulae is a method involving the _____.
a. Value b. sentence c. formula d. none of these
- If $a + b = 3$ and $a - b = 2$ then the relation free from 'b' is _____.
a. $b = 3$ b. $2a = 5$ c. $a = 4$ d. none of these
- Eliminate x from $\begin{matrix} b+x=0 \\ c+x=0 \end{matrix}$ then it will be _____.
a. $b - c = 0$ b. $c - b = 0$ c. both A and B d. none of these

Find the relation free of x from the following equations: OR Eliminate x from the following equations:

- $x + \frac{1}{x} = t + 2, x - \frac{1}{x} = t - 2$ 2. $x^2 + \frac{1}{x^2} - p = 2, x^2 - \frac{1}{x^2} + q = 3$ 3. $x + \frac{1}{x} = p, x - \frac{1}{x} = q$
- $x - \frac{1}{x} = 2a, x^2 - \frac{1}{x^2} = b^2$ 5. $x + \frac{1}{x} = t, x - \frac{1}{x} = \frac{t}{2}$ 6. $x^2 - \frac{1}{x^2} = m^2, x^4 + \frac{1}{x^4} = n^4$
- $x + \frac{1}{x} = 2p, x - \frac{1}{x} = 2q + 1$ 8. $x + \frac{1}{x} = 2a, x^2 - \frac{1}{x^2} = b^2$ 9. $x + \frac{1}{x} = a, x^3 + \frac{1}{x^3} = b^3$

Simplify with the help of logarithm:

- $\sqrt[7]{28.3}$ 11. $(89.2)^2$ 12. $\frac{82.9 \times 88.6}{2.25}$ 13. $\sqrt[3]{\frac{9310}{(1.08)(62.3)^3}}$ 14. $\frac{\sqrt{780.6 \times \sqrt{3}}}{4}$ 15. $\frac{4.87}{(83.8)(3.14)}$
- $\frac{(0.96)(87.2)^2}{4850}$ 17. $\frac{(37.37)^2 \times (86.2)}{591}$

(Assignment #08)

Multiple Choice Questions:

- The reciprocal of $\sin x$ is: (cosx, tanx, cosecx, cotx)
- $1 + \tan^2 \theta =$ ($\sec \theta, \cot \theta, \sec^2 \theta, \text{none}$)
- $\cot 45^\circ =$ ($\frac{1}{2}, \frac{1}{\sqrt{3}}, \sqrt{3}, 1$)
- $\tan \theta \cdot \cot \theta =$ ($\tan \theta, \cot \theta, \sin \theta, 1$)
- $\sec 60^\circ =$ (3, 2, 1, 4)

- Find all the trigonometric ratios of (i) 45° (ii) 60° (iii) 30°

Prove that: 1. $\sin^2 \theta + \cos^2 \theta = 1$ 2. $1 + \tan^2 \theta = \sec^2 \theta$ 3. $1 + \cot^2 \theta = \text{cosec}^2 \theta$ 4. $(\text{cosec}^2 \theta - 1) \sin^2 \theta = \cos^2 \theta$

5. $(\cos \theta - \sin \theta)^2 + 2 \sin \theta \cos \theta = 1$ 6. $(\tan \theta + \cot \theta) \sin \theta \cos \theta = 1$ 7. $\frac{1 - \sin \theta}{\cos \theta} = \frac{\cos \theta}{1 + \sin \theta}$ 8. $\frac{\sin \theta}{1 - \cos \theta} = \frac{1 + \cos \theta}{\sin \theta}$

9. $\frac{\sin \theta}{1 + \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = 2 \text{cosec} \theta$ 10. $\cot \theta + \tan \theta = \sec \theta \text{cosec} \theta$ 11. $\cot^2 \theta - \cos^2 \theta = \cot^2 \theta \cos^2 \theta$

12. $\sec \theta - \tan \theta \sin \theta = \cos \theta$

13. A ladder makes an angle of 60° with the floor and reaches a height of 6 meters on the wall. Find the length of the ladder.

14. A tree 90 dm high on the bank of a river makes an angle of 30° from a point directly on the opposite bank of a river. Find the width of a river.

15. The foot of a tower is at a distance of 210 dm from a point on the earth. The angle of elevation of the tower from the point is 60° . Find the height of the tower.

16. Find the angle of elevation of the sun when a 6m high pole makes a shadow of length $2\sqrt{3}$ m on the horizontal surface.

(Assignment #09)

Find the Arithmetic mean, Median and Mode of the following:

1. 4,6,10,12,15,20,25,28,30

2. 23, 15, 35, 48, 41, 5, 8, 9, 11, 15

3. 148, 145, 160, 157, 160

1.	C.I	f
	15-19	9
	20-24	18
	25-29	35
	30-34	7
	35-39	4

2.	C.I	f
	5-10	12
	10-15	9
	15-20	18
	20-25	7
	25-30	4

3.	C.I	f
	110-114	5
	115-119	12
	120-124	23
	125-129	6
	130-134	2

4.	C.I	f
	48-50	5
	50-52	7
	52-54	10
	54-56	9
	56-58	6
	58-60	3

5.	C.I	f
	30-34	14
	35-39	16
	40-44	18
	45-49	23
	50-54	18
	55-59	11

Find the variance and standard deviation of the following:

1. 3,5,7,9,11,13

2. 12,16,10,14,8

3. 5,13,15,25,12,18,17,19,20,16,3

4. 35,32,31,34,38,33

5. 43,54,45,44,58,47,50,51,45,48,46

6. 66,46,50,60,63,64,51,61,55

7. 57,61,60,64,59,55,58,63,65,61,56

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