



SCIENCE & HUMANITIES DEPARTMENT

Vision: To excel in the field of technology by creating technocrats with value based professionalism.

Mission: To provide technical expertise to fulfill the need of the industry.

To impact ethical values & professional responsibilities.

To achieve excellence in academics

SUBJECT: Basic Mathematics (311302)

Topic name: Algebra

Date :1/9/2025

Course Outcome : Apply the concepts of algebra to solve engineering related problem

1) Evaluate $\log_3 81$

2) Find the value of $\log \frac{2}{3} + \log \frac{4}{5} - \log \frac{8}{15}$

3) Prove that $\frac{1}{\log_3 6} + \frac{1}{\log_8 6} + \frac{1}{\log_9 6} = 3$

4) Prove that $\frac{1}{\log_{ab} abc} + \frac{1}{\log_{bc} abc} + \frac{1}{\log_{ca} abc} = 2$

5) Expand the determinant $\begin{vmatrix} 3 & -5 & -1 \\ 1 & 3 & 5 \\ -5 & 1 & 3 \end{vmatrix}$

6) If $A = \begin{bmatrix} 5 & 3 \\ -1 & 1 \end{bmatrix}, B = \begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}$ Find $2A - 3B$

7) Find A, If $2A + 3 \begin{bmatrix} 1 & 3 \\ 2 & 5 \end{bmatrix} = \begin{bmatrix} 5 & 7 \\ 6 & 3 \end{bmatrix}$

8) If $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}, B = \begin{bmatrix} 3 & -5 \\ -1 & 2 \end{bmatrix}$ Show that $AB = BA = I$

9) If $A = \begin{bmatrix} 3 & 4 & -2 \\ 2 & 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 2 & -1 \\ 3 & 4 \\ 0 & 2 \end{bmatrix}$ Find AB

10) If $A = \begin{bmatrix} 2 & 4 & 4 \\ 4 & 2 & 4 \\ 4 & 4 & 2 \end{bmatrix}$ Show that $A^2 - 8A$ is a scalar matrix

11) Find the inverse of matrix by adjoint method

$$A = \begin{bmatrix} 1 & 1 & -2 \\ 2 & -1 & 1 \\ 3 & 1 & -1 \end{bmatrix}$$

12) Solve the following equations by matrix inversion method

$$x + y + z = 3, 3x - 2y + 3z = 4, 5x + 5y + z = 11$$

13) Solve the following equations by matrix inversion method

$$2x + y = 3, 2y + 3z = 4, 2x + 2z = 8$$

14) If $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}, B = \begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}$ Verify that $(AB)^T = B^T A^T$

15) Resolve into partial fraction $\frac{1}{x(x+1)}$

16) Resolve into partial fraction

$$\frac{2x+3}{x^2-2x+3}$$

17)Resolve into partial
fraction

$$\frac{\sin \theta + 1}{(\sin \theta + 2)(\sin \theta + 3)}$$

18)Resolve into partial
fraction

$$\frac{1}{1+x^3}$$

19)Resolve into partial
fraction

$$\frac{9}{(x-1)(x+2)^2}$$

20)Resolve into partial
fraction

$$\frac{x}{x^3+1}$$

Date of Submission: - 8/9/2025

Assign By: - Mrs V.Patil/Mrs U.Nimkar /Mrs D.Joshi



SARASWATI Education Society's
SARASWATI Institute of Technology

Learn Live Achieve and Contribute

Kharghar, Navi Mumbai - 410 210.

SCIENCE & HUMANITIES DEPARTMENT

Vision: To excel in the field of technology by creating technocrats with value based professionalism.

Mission: To provide technical expertise to fulfill the need of the industry.

To impact ethical values & professional responsibilities.

To achieve excellence in academics

ASSIGNMENT –II

SUBJECT:. Basic Mathematics (311302)

Topic name: Algebra

Date :4/9/2025

Course Outcome : Solve the area specific engineering problems under given conditions of straight line

ASSIGNMENT –II

- 1) Find the equation of straight line passing through the points $(-4, 6)$ and $(8, -3)$
- 2) Find the equation of line passing through the point $(3, 4)$ and perpendicular to the line $2x - 4y + 5 = 0$
- 3) Find the equation of straight line passing through the points $(2, 5)$ And the point of intersection of lines $x + y = 0$ and $2x - y = 9$
- 4) Find the equation of straight line passing through the points of intersection of lines $4x + 3y = 8$, $x + y = 1$ and parallel to the line $5x - 7y = 3$

- 5) Find the equation of straight line passing through the points of intersection of lines $2x+3y=13$, $5x-y=7$ and perpendicular to the line $2x-5y+7=0$
- 6) Find the acute angle between the lines $3x-2y+4=0$ and $2x-3y-7=0$
- 7) Find the acute angle between the lines $3x-y+4=0$ and $2x+y-3=0$
- 8) Find the acute angle between the lines $y=5x+6$ and $y=x$
- 9) Find the perpendicular distance between the point $(3,4)$ and the line $3x+4y=5$
- 10) Find the perpendicular distance between the parallel lines $5x-12y+1=0$ and $10x=24y+1$
- 11) Find the length of perpendicular from the point $(5,4)$ on the straight line $2x+y=34$
- 12) Find the distance between lines $3x+2y=5$ and $6x+4y=6$

Date of Submission: - 8/9/2025

Assign By: - Mrs V.Patil/Mrs U.Nimkar /Mrs D.Joshi

SCIENCE & HUMANITIES DEPARTMENT

Vision: To excel in the field of technology by creating technocrats with value based professionalism.

Mission: To provide technical expertise to fulfill the need of the industry

To impact ethical values & professional responsibilities.

To achieve excellence in academics

SUBJECT: Basic Mathematics(311302)

Assignment No:05

Topic name: Statistics

Assignment –IV (Statistics)

- 1) Find mean, standard deviation and coefficient of variance of the following data:

Class-Interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	3	5	8	3	1

- 2) Attempt the following:

Find mean and mean deviation for the following data:

Class-Interval	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	4	6	10	18	9	3

- i. The two sets of observation are given below:

Set – I	Set – II
$\bar{x} = 82.5$	$\bar{x} = 48.75$
$\sigma = 7.3$	$\sigma = 8.35$

Which of the two sets is more consistent?

- 3) Find the mean, standard deviation and coefficient of variance of the following data:

Class – Interval	0-10	10-20	20-30	30-40	40-50
Frequency	14	23	27	21	15

- 4) From the following data, calculate range and coefficient of range:

Marks	10-19	20-29	30-39	40-49	50-59	60-69
No. of Students	6	10	16	14	8	4

- 5) The data of runs scored by two batsmen A and B in five one day matches is given below:

Batsman	Average run scored	S.D.
A	44	5.1
B	54	6.31

State which batsman is more consistent ?

Date of Submission: 27/10/2025

Assign by: Vrushali Patil/ Darshana Joshi/ Urmila Nimkar