$\LaTeX$ Assignment-I

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1 Enumerate

1. Prove that there is only one identity in a Group
2. In a group G, the right and left cancellation laws hold.
3. Prove that each element in a Group has unique inverse.
4. State and prove Socks Shoes property of a Group.
5. The curve $y = \sqrt{x}$, where $x \geq 0$,is concave
6. If $\sin\theta = 0$ and $0 \leq \theta < 2\pi$, then $\theta = 0$ or $\theta = \pi$.

2 Itemize

- The identity holds for all real $x : \sin^2 x + \cos^2 x = 1$
- Let $x = (x_1, x_2, \ldots, x_n)$ be a vector of non-negative integers. Let
$$M_r(x) = \left(\frac{x_1^r + x_2^r + \cdots + x_n^r}{n}\right)^{1/r}, r \in \mathbb{R}\backslash\{0\}$$
- It is not always true that
$$\frac{a+b}{c+d} = \frac{a}{c} + \frac{b}{d}.$$
- The curve $y_{10} = \sqrt[5]{x}$, where $x \geq 0$, is concave
- A set A={x : x is an English Alphabet}

3 Ascents

Szegö
t̃ilde
Ȯ
Szegó
abD̦

4 Array

$$F(x) = \begin{cases} x, & x = 0; \\ x^2, & x > 0; \\ x + 5, & x < 0; \end{cases}$$

$$A = \begin{pmatrix} 1 & 4 & 7 & 4 & 8 \\ 2 & 5 & 8 & 5 & 9 \\ 3 & 6 & \alpha & 3 & 0 \\ \beta & 8 & 5 & 8 & 10 \\ 34 & 76 & 0 & 6 & 8 \end{pmatrix}$$

$$\det A = \begin{vmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & \alpha \end{vmatrix}$$

S.No.	Name	Marks(10)
1	ABC	7
2	DF	8

1	4	7
2	5	8
3	6	α

$$\begin{aligned} |a+b+c| &\leq |a+b| + |c| \\ &\leq |a| + |b| + |c| \end{aligned}$$

$$\begin{aligned} |a+b+c| &\leq |a+b| + |c| \\ &\leq |a| + |b| + |c| \end{aligned} \tag{1}$$