

MATH-I (MA 10001)

Sec 9 & 10

BIBHAS ADHIKARI

Calculus.

1. Functions of one variable
2. Functions of two more than one variables
3. Ordinary DE.
4. Functions of complex variables.

$f: A \rightarrow B$

↓
set of
inputs

↓
set of
outputs.

$f(x) = ?$, $x \in A$.

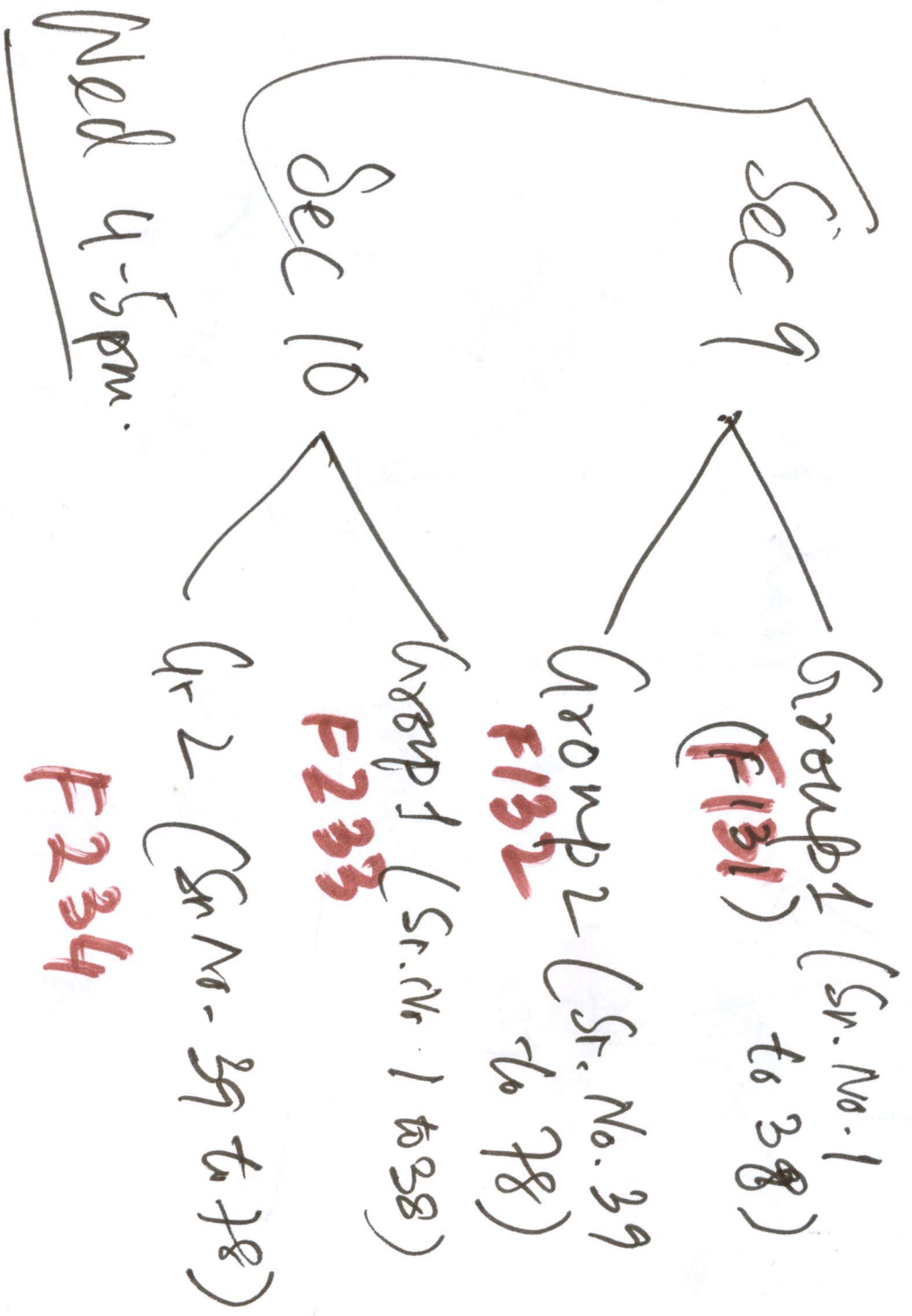
Mid Sem: 30 marks

End Sem: (7th of Nov.)
50 marks.

Class test: 10 (or 15 marks)^{marks}

attendance: ~10 marks

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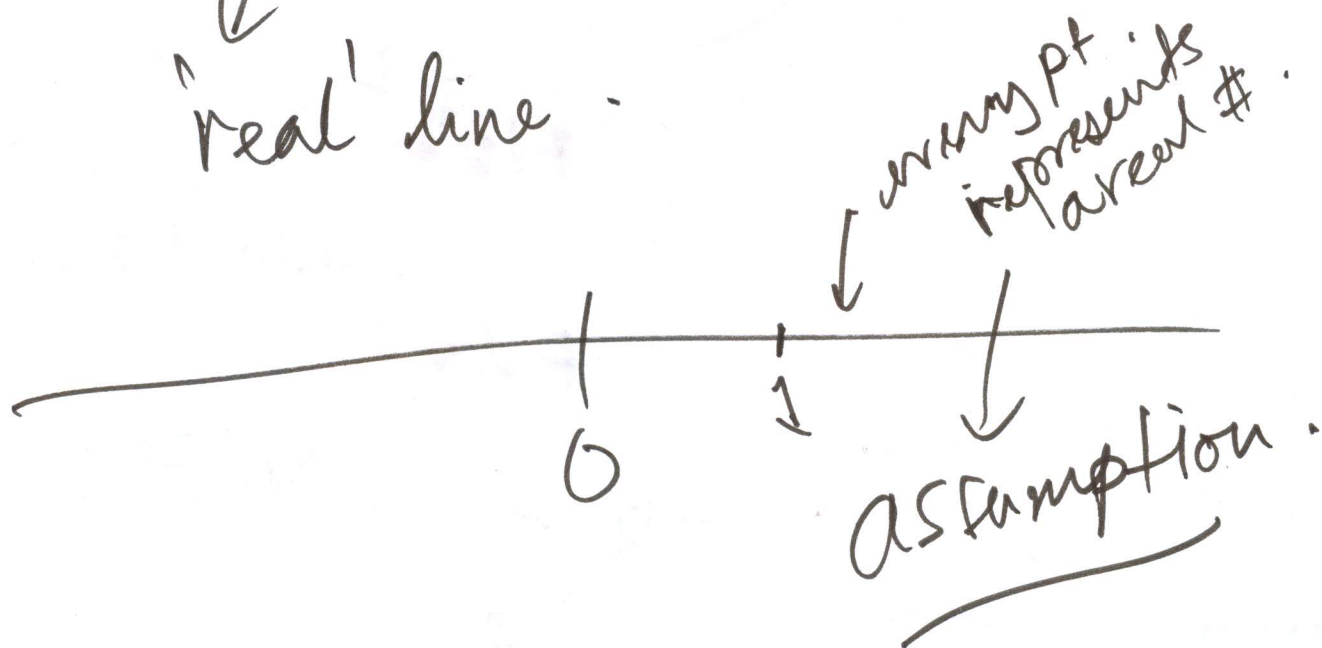


Text Books:

1. Thomas's Calculus
2. Kreny ~~sig~~ Advanced Engg. Mathematics.
3. ...
4. ...
5. ...

$$f: \mathbb{R} \rightarrow \mathbb{R}$$

↙ ↘
Set of real numbers
'real' line.



$\mathbb{Q} \rightarrow$ set of rational numbers

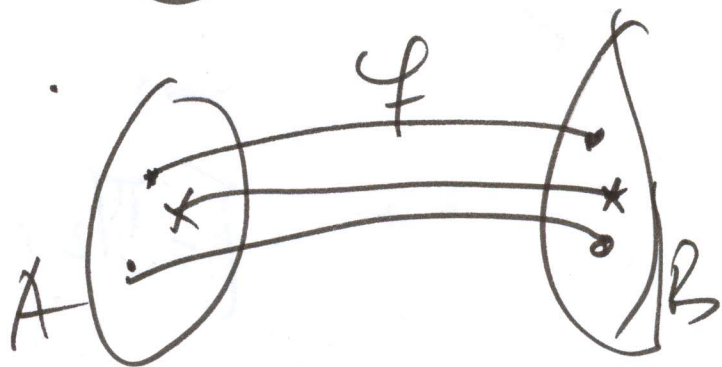
$(\mathbb{R} \setminus \mathbb{Q}) \rightarrow$ set of irrational numbers.

Infinite Set:

A set S is called an infinite set if a proper subset of S contains the same # of elements as S does.

Two sets A and B have same # of elements if there is a bijective (injective + surjective)

$f: A \rightarrow B$



$$\mathbb{N} \xrightarrow{f} 2\mathbb{N}$$

$$f(x) = 2x$$

Q. Can you find SC $\neq \mathbb{R}$
At. \exists a bijection

map $f: S \rightarrow \mathbb{R}$.

$$S = (-\pi/2, \pi/2)$$

$$[-\pi/2, \pi/2] = (-\pi/2, \pi/2) \cup \{-\pi/2, \pi/2\}$$