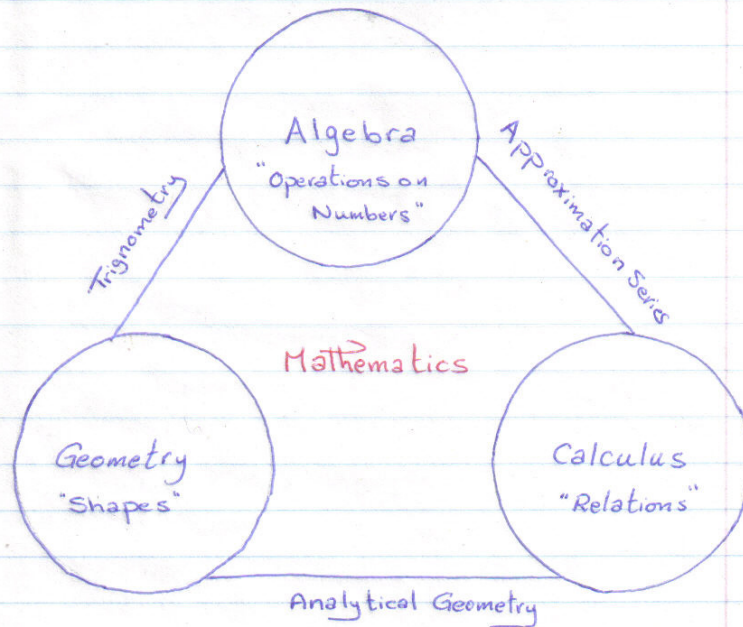


## Engineering Analysis "ENG180"



\* Mathematics  $\Rightarrow$  Logic

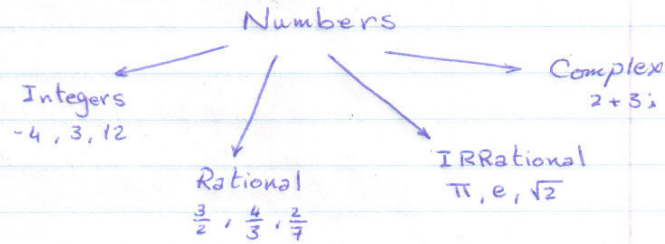
\* Science  $\Rightarrow$  Laws of Nature

\* Engineering  $\Rightarrow$  Analysis & Design of a product or a process

\* Technology  $\Rightarrow$  Manufacturing

1. Algebra :-

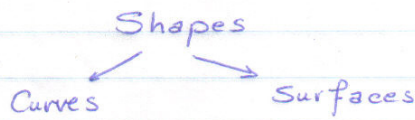
\* operations on numbers



\* Complex Numbers are 2D but much powerful than vectors "for example vectors have no Inverse". but vectors can be 3D or more!

2. Geometry :-

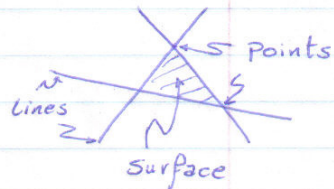
\* deals with shapes



\* Euler Formula :-

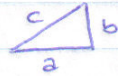
$$V + F = E + 2$$

No of Vertices      No. of faces      No. of Edges

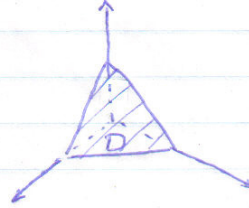
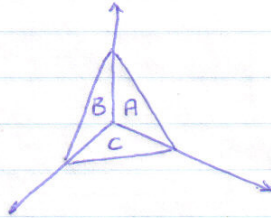


$V = 5 \quad F = 5 \quad E = 8$

\* Prove that



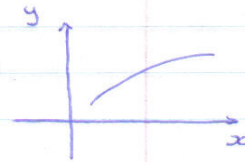
$$c^2 = b^2 + a^2$$



$$D^2 = A^2 + B^2 + C^2$$

### 3. Calculus :-

\* Relations (functions) between variables  $y = f(x)$



\* Pythagoras proved the fundamental theorem of geometry

\* Gauss proved the fundamental theorem of Algebra

\* Leibnitz proved the fundamental theorem of Calculus.

{ Gauss theorem, Stokes theorem, Reynolds transport theorem, .... }