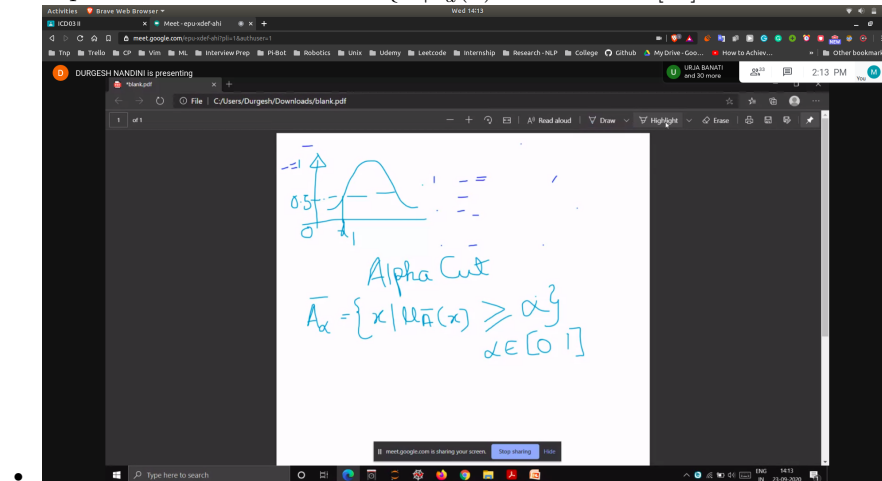


Fuzzy Number

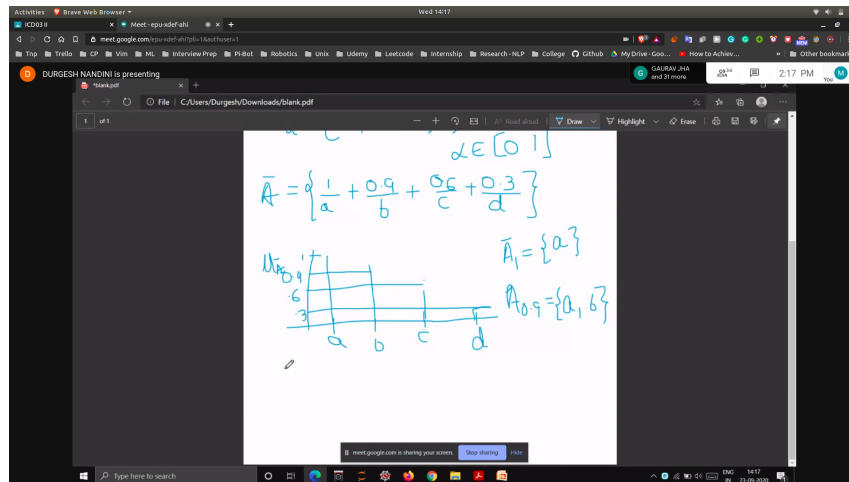
- A fuzzy number is a fuzzy set
- FS should be convex
- If it's normalized
- It's MF is peicewise continoues

Alpha Cuts

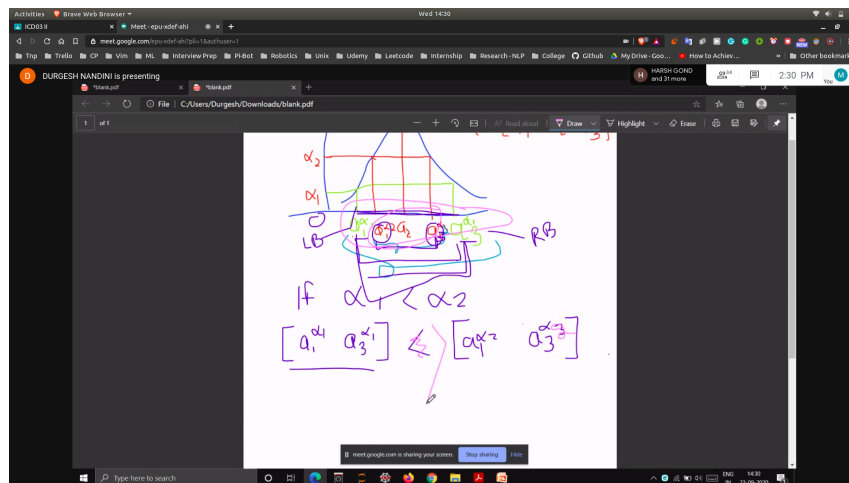
- Any particular $A'(A \text{ bar})$
- Alpha cuts can be defined as $\{x | u'_a(x) \geq \alpha \text{ where } \alpha \in [0, 1]\}$



Example



Alpha Cut Interval



Convex Fuzzy Set

- A convex fuzzy set is described by membership function whose membership values are strictly monotonically increasing or monotonically decreasing with increasing value for the element in the universe
- Suppose we have $[x_1, x_2]$ in a fuzzy set

- A convex fuzzy set is defined by
- $u_a[\lambda x_1 + 1 - \lambda x_2] \geq \min(u_a(x_1), u_a(x_2))$