NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Set Theory

Union and intersections of sets – Part 1

With
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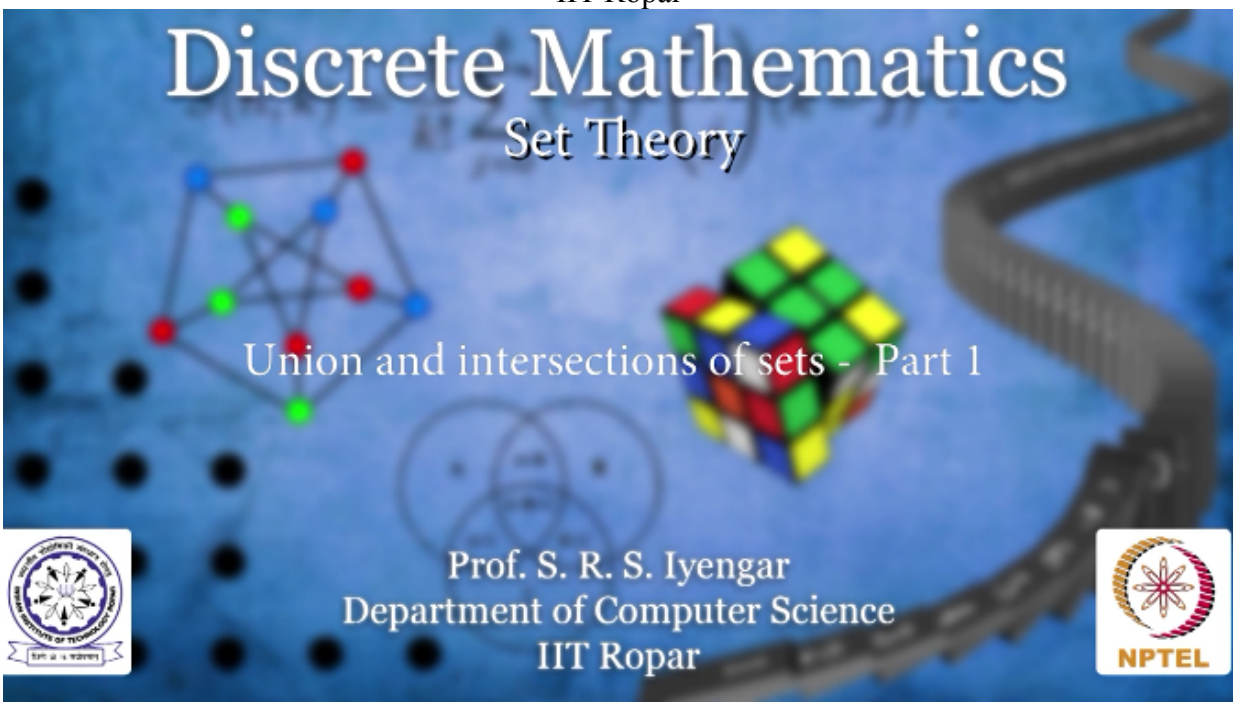
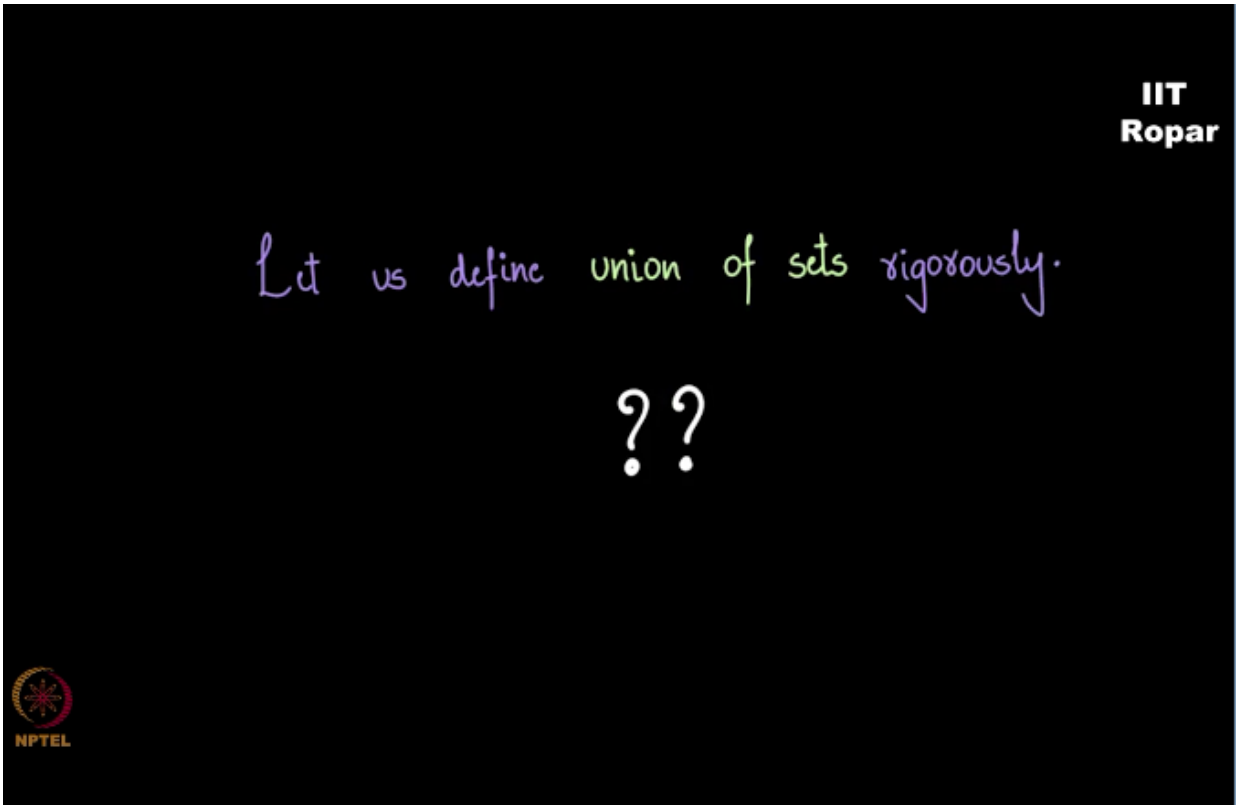
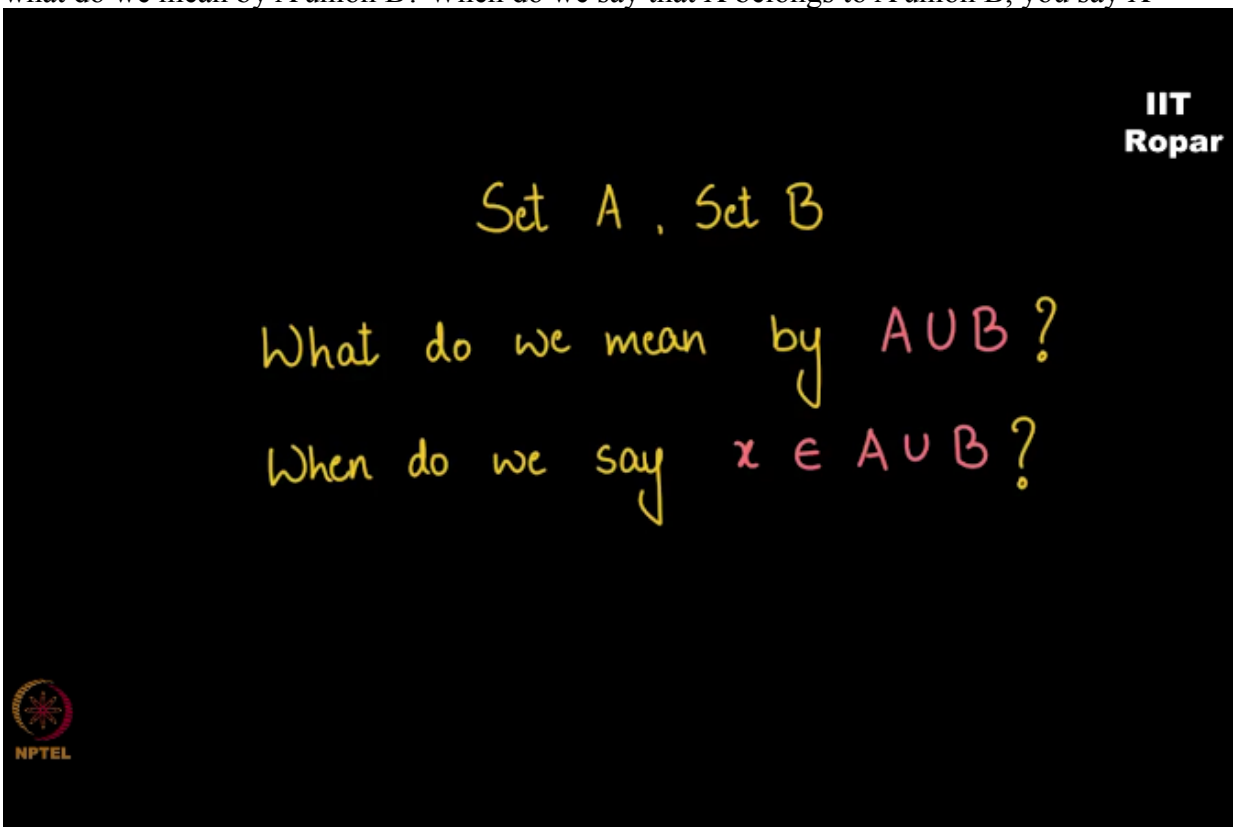


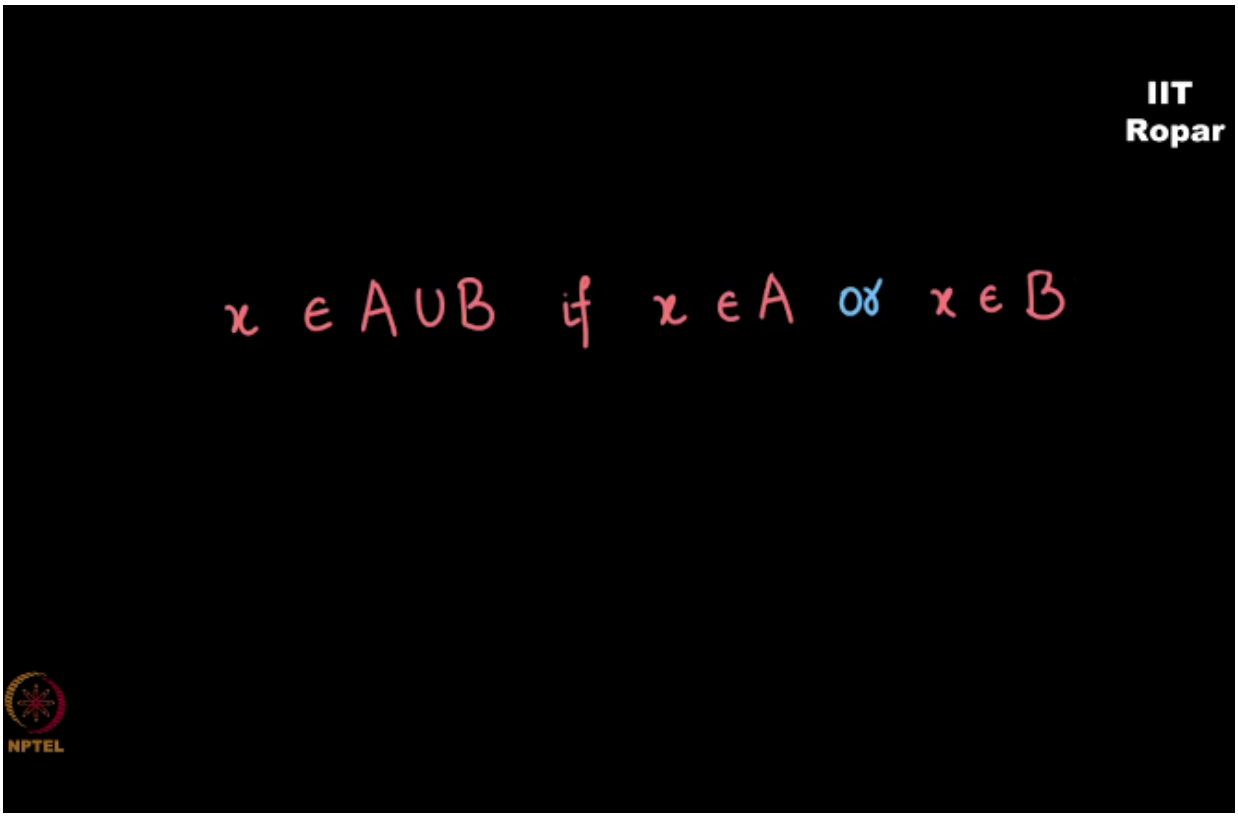
We now understand what one means by union of two sets let us try defining this rigorously. What do you even mean by defining this rigorously? You have the set A, you have the set B,



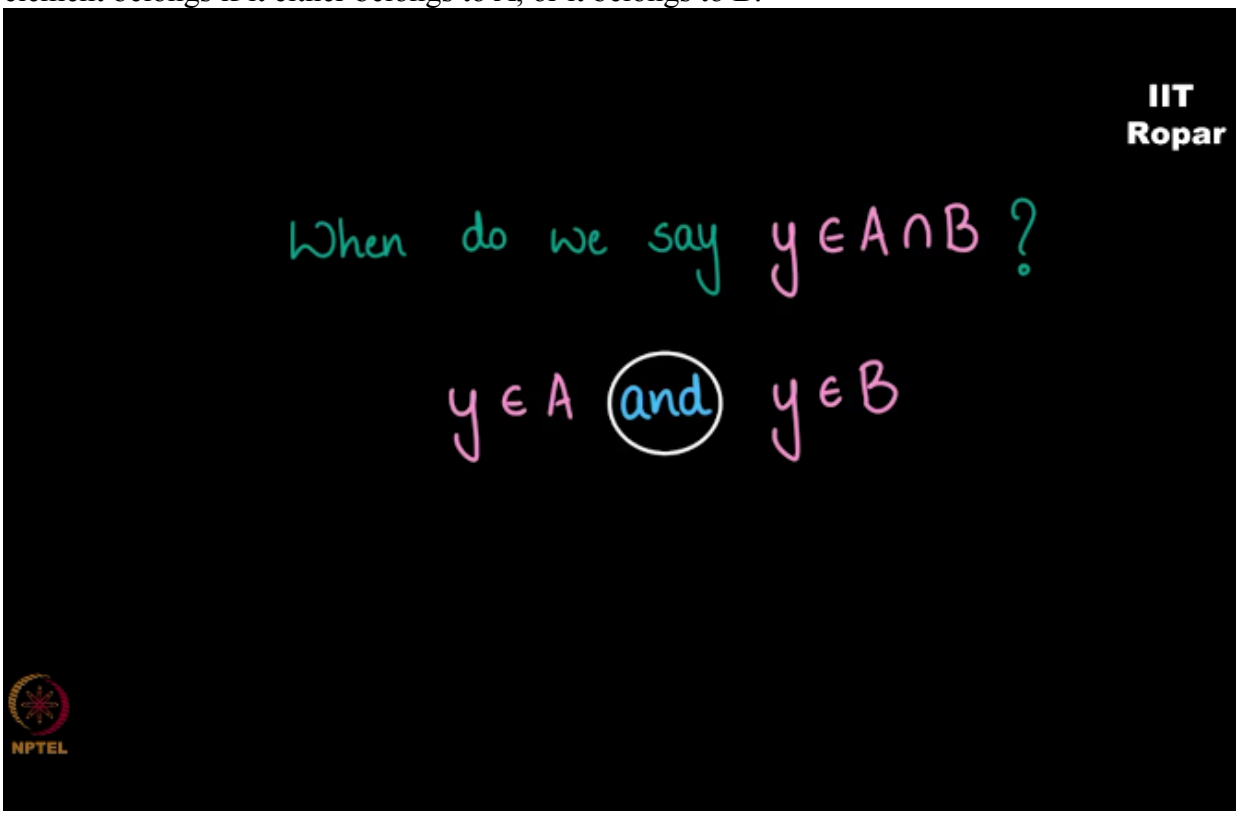
what do we mean by A union B? When do we say that X belongs to A union B, you say X



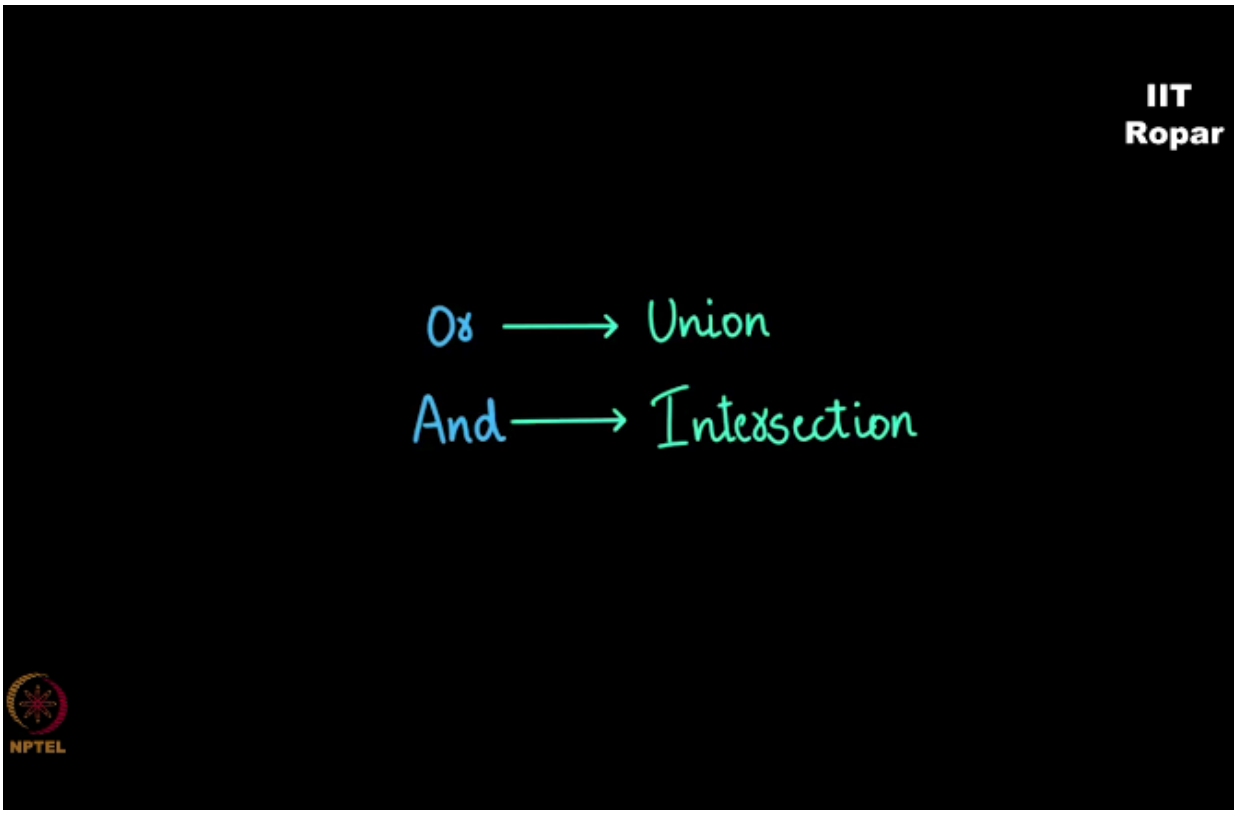
belongs to A union B if X belongs to A, or X belongs to B, if one of them happens then we say X belongs to A union B, that's the definition of A union B.



How is a set defined? It is defined based on what elements are present in it, and I'm defining what exactly we mean by A union B by defining what kind of elements belong in the set, an element belongs if it either belongs to A, or it belongs to B.



Now similarly is the case for A intersection B, when do we say an element Y belongs to A intersection B? Whenever Y belongs to A, and Y belongs to B, note the usage of the word and



here while we used or for union, we use and for intersection, this is like stating the obvious but this is a very rigorous way of defining what is union and intersection which will come in handy in solving a few problems.

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