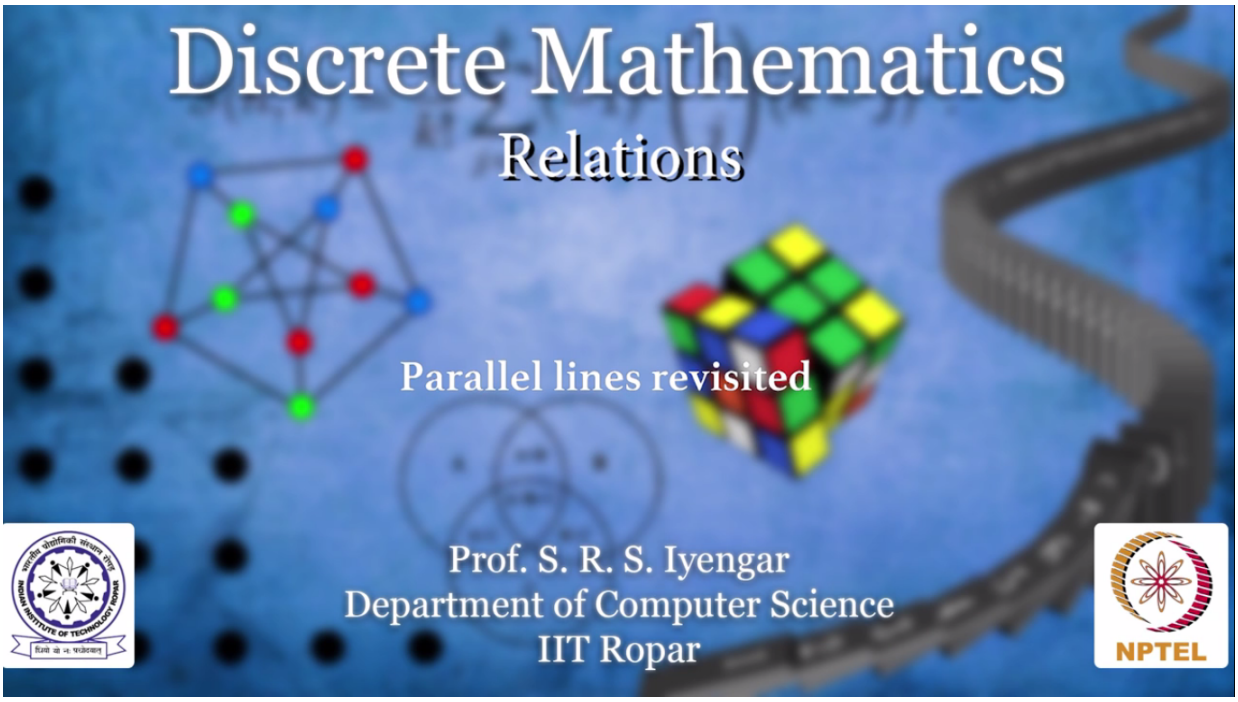
NPTEL
NPTEL ONLINE COURSE
Discrete Mathematics
Logic
Parallel lines revisited

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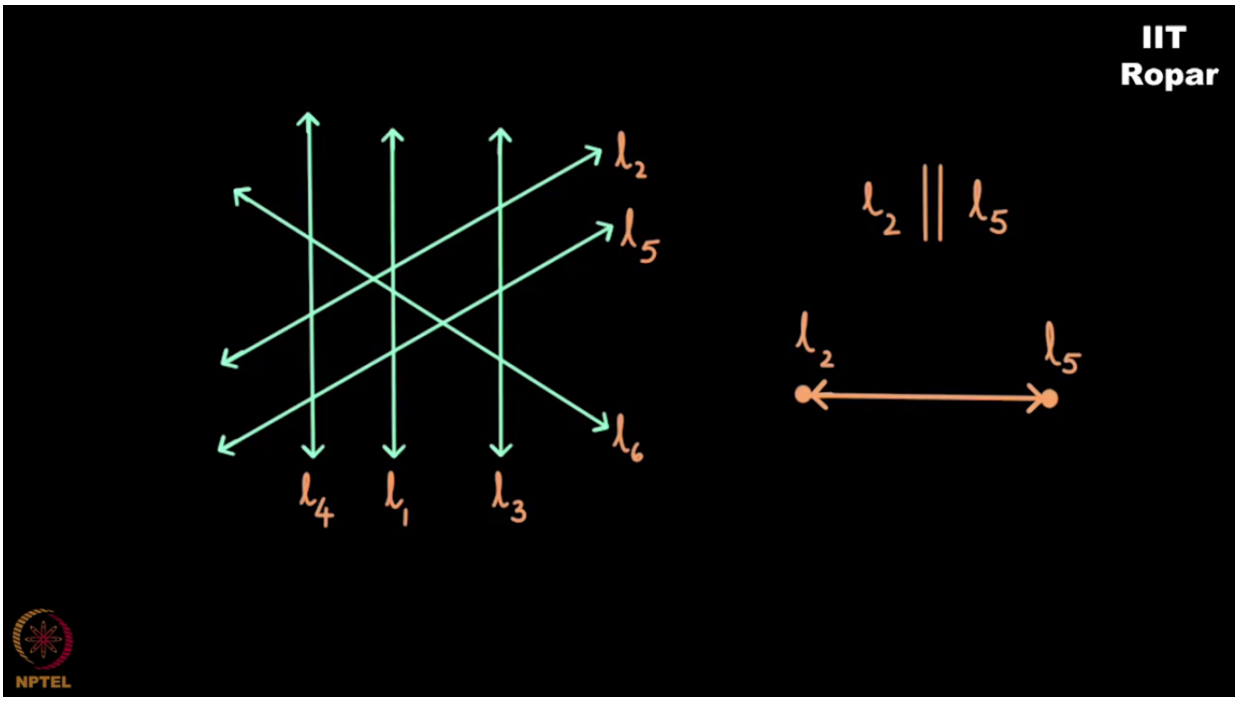
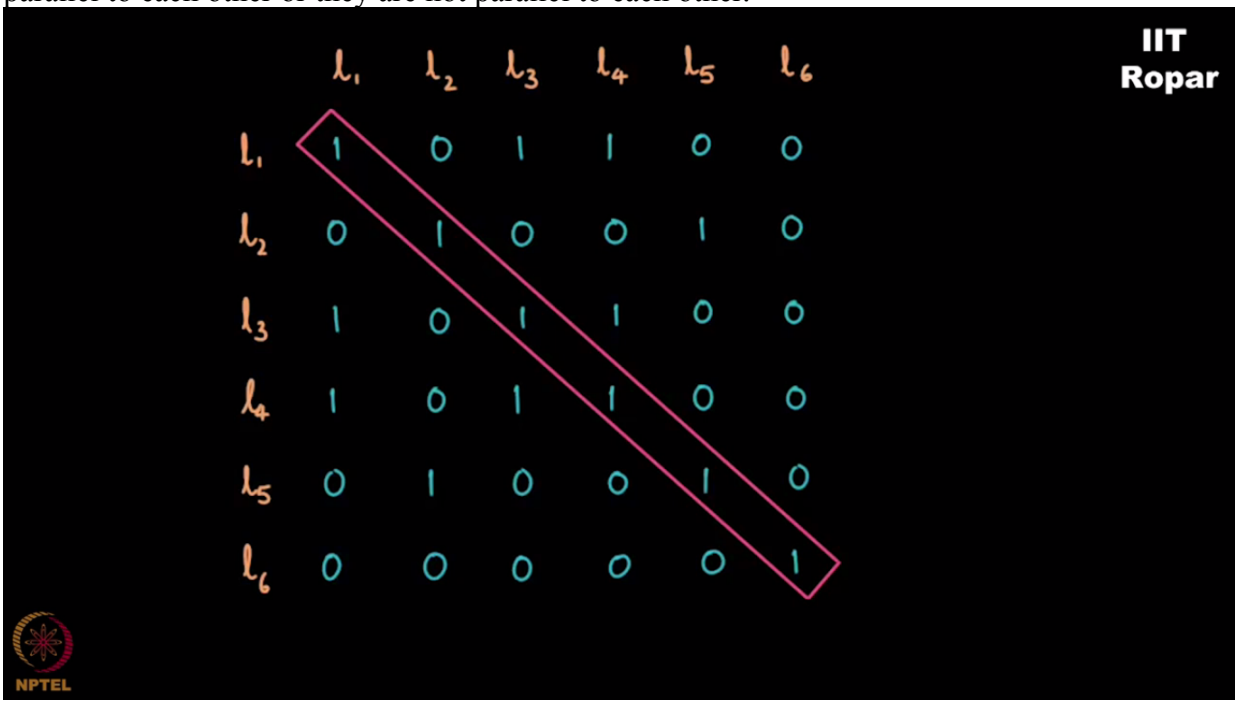
Let me take an example now. Of these six lines l1, l2, l3, l4, l5, and l6 as you can observe l2 is parallel to l5 so which means in the graph l2 will have a line arrow pointing towards l5 and l5 is also parallel to l2 obviously so there will be a symmetric arrows from l2 to l5 and l5 to l2 so on and so forth.




The graph will look like this and the corresponding matrix will, let me populate the corresponding matrix,. there will be a 1, 1, 1, 1, 1, 1, 1 this way. You can pause the video and maybe check if I am right. I have put a 1 let's say in l3 and l4, l3th column and l4th column because l3 is parallel to l4 so is l4 with l3. l4 is parallel to l3. You see something very nice about this matrix of course the diagonals have 1 adding to that we observe the matrix is symmetric you see on the right side. You see below the diagonal on the left side both are exactly the same that is because Li, Lj, lj, li, both have either 1 or 0 that is because two lines are either parallel to each other or they are not parallel to each other.



Anyways another small observation which I made just now that whenever a line is parallel to another line let us say here l4 is parallel to l1 and l1 is parallel to something else l3 then l4 will be parallel to l3. Correct. This may not be true in real life where a person A is friends with person B and a person B is friends with person C. Person A needn't be friends with person C. This is not true in real life with the friendship relation but with parallel lines relation this seems to be true, correct.