NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Graph Theory – 2

V - E + R = 2

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Let me introduce a very nice concept, nice and cute, so nice that you can explain this to a school kid, it's surprisingly true, so before that couple of definitions, do you look at this triangle,
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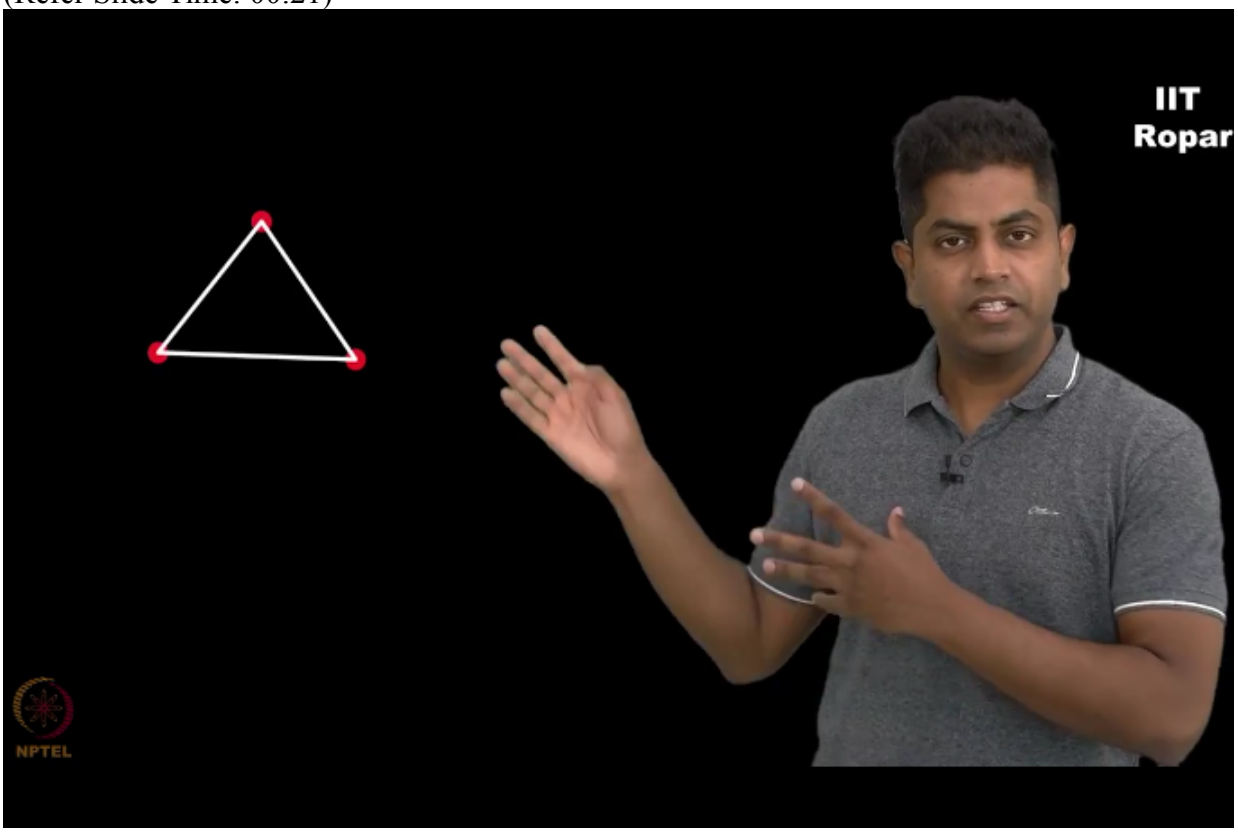

it is your C3, a cycle with 3 vertices, it has 3 vertices let's make a note of it, 3 edges, and please note let me define what is a region, 2 regions, region 1, region 2, you will get to know what the regions are, what one means by region as I give you more examples.
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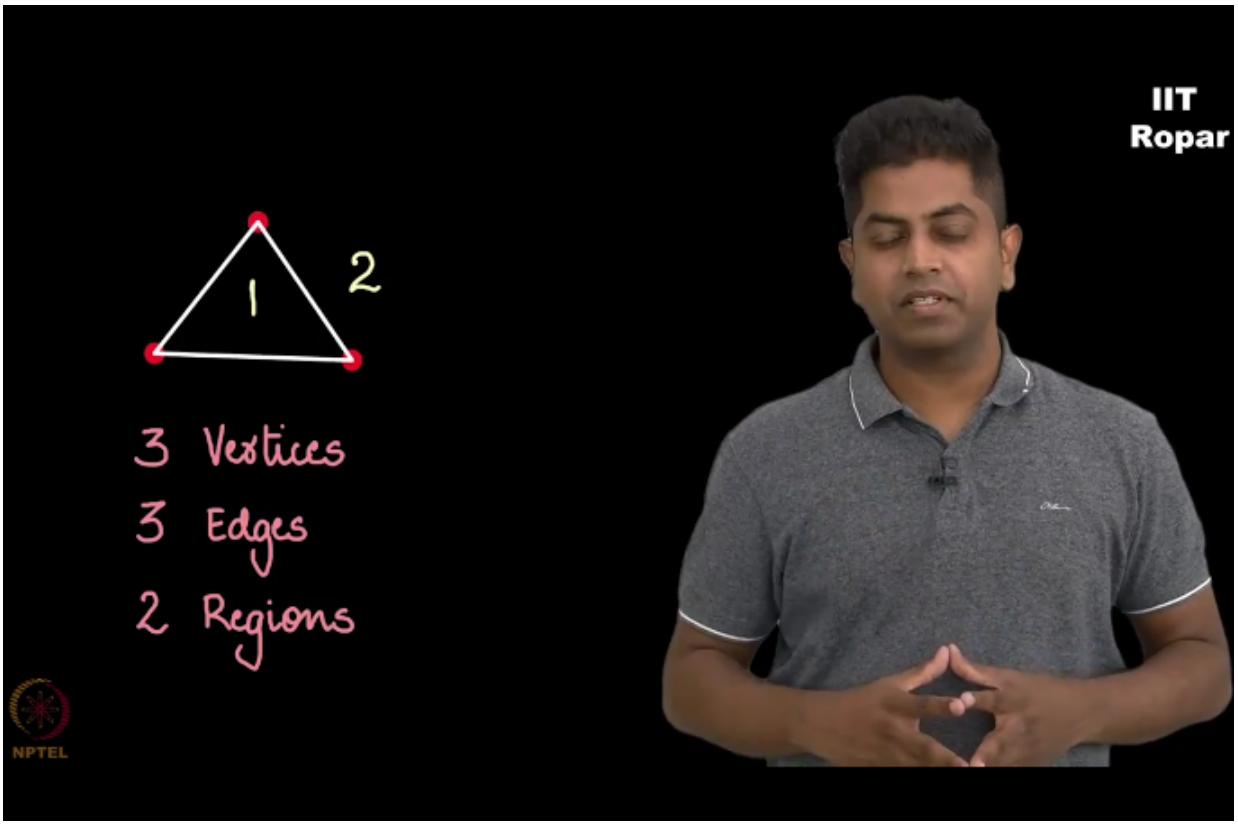

Look at the next example, C4 with a diagonal let say,
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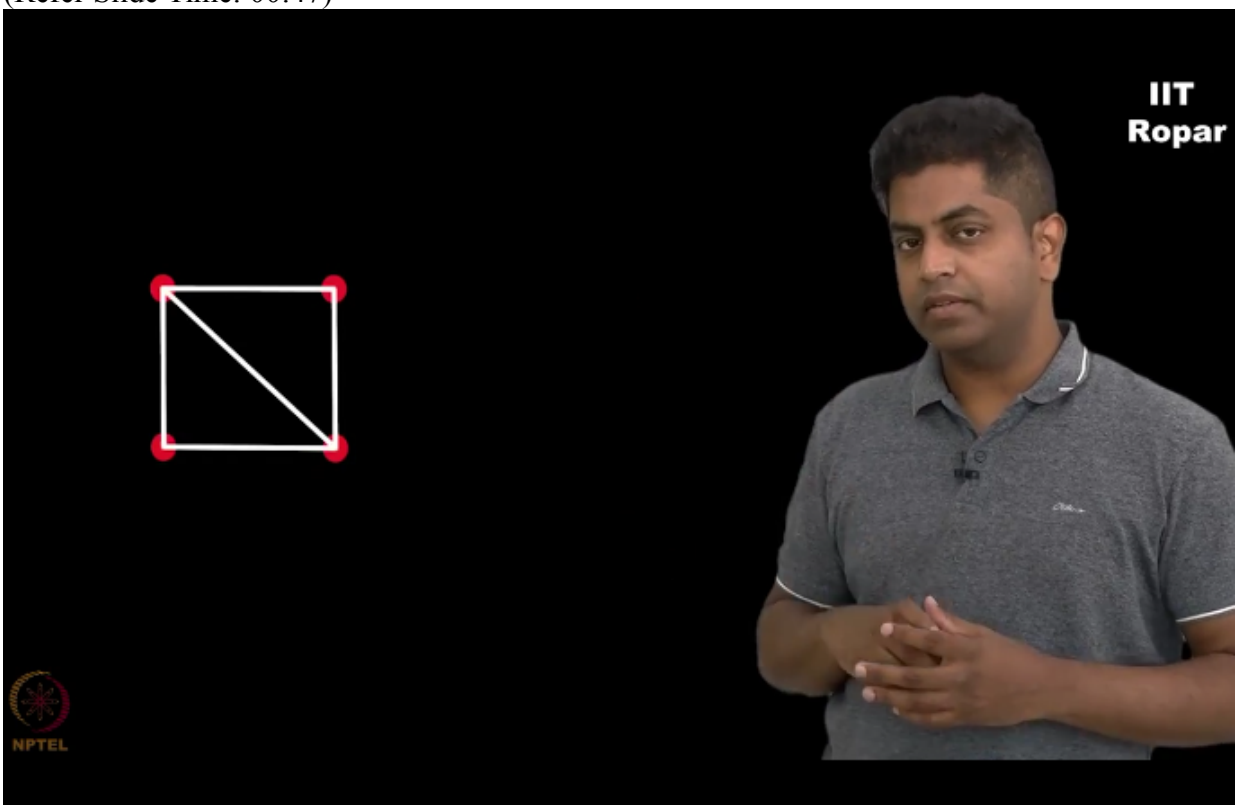

how many vertices do you have? 1, 2, 3, and 4,
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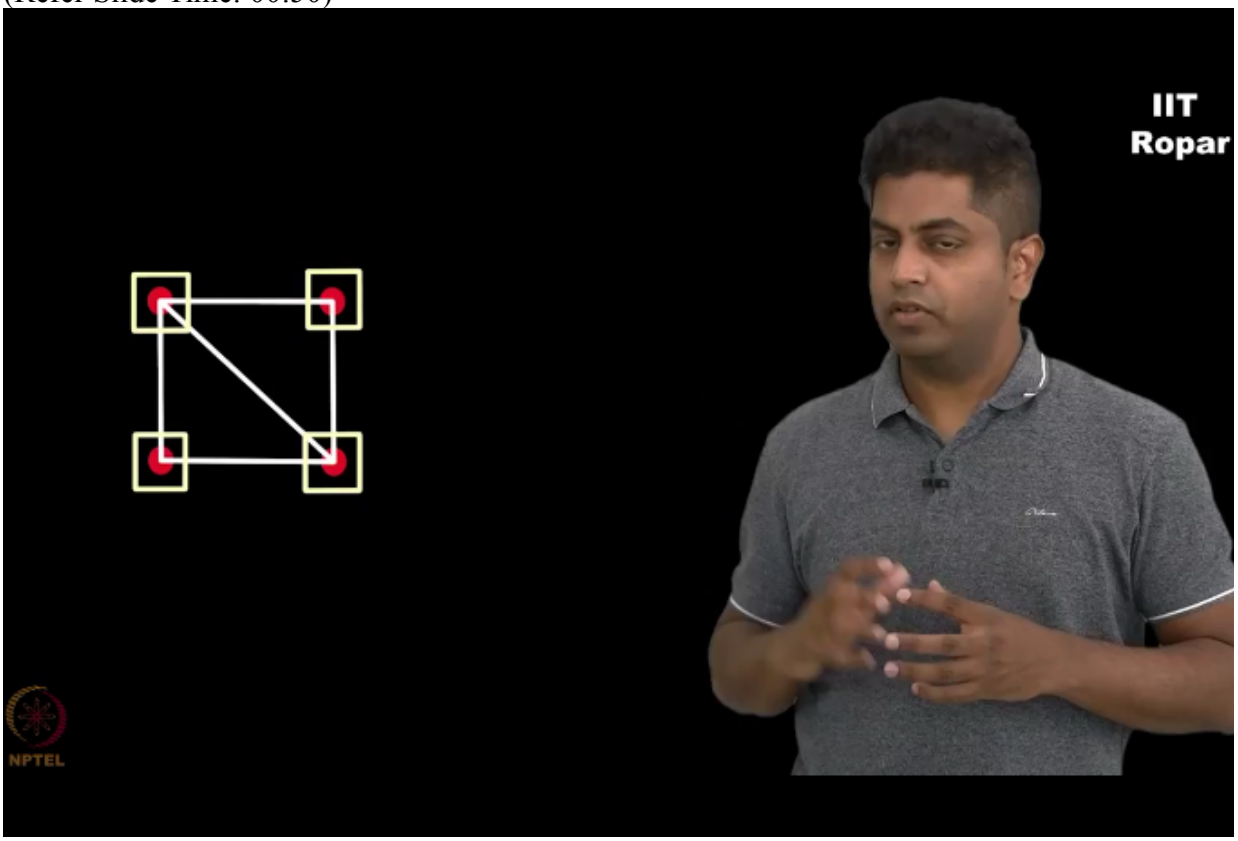

how many edges do you have? 1, 2, 3, 4, 5,
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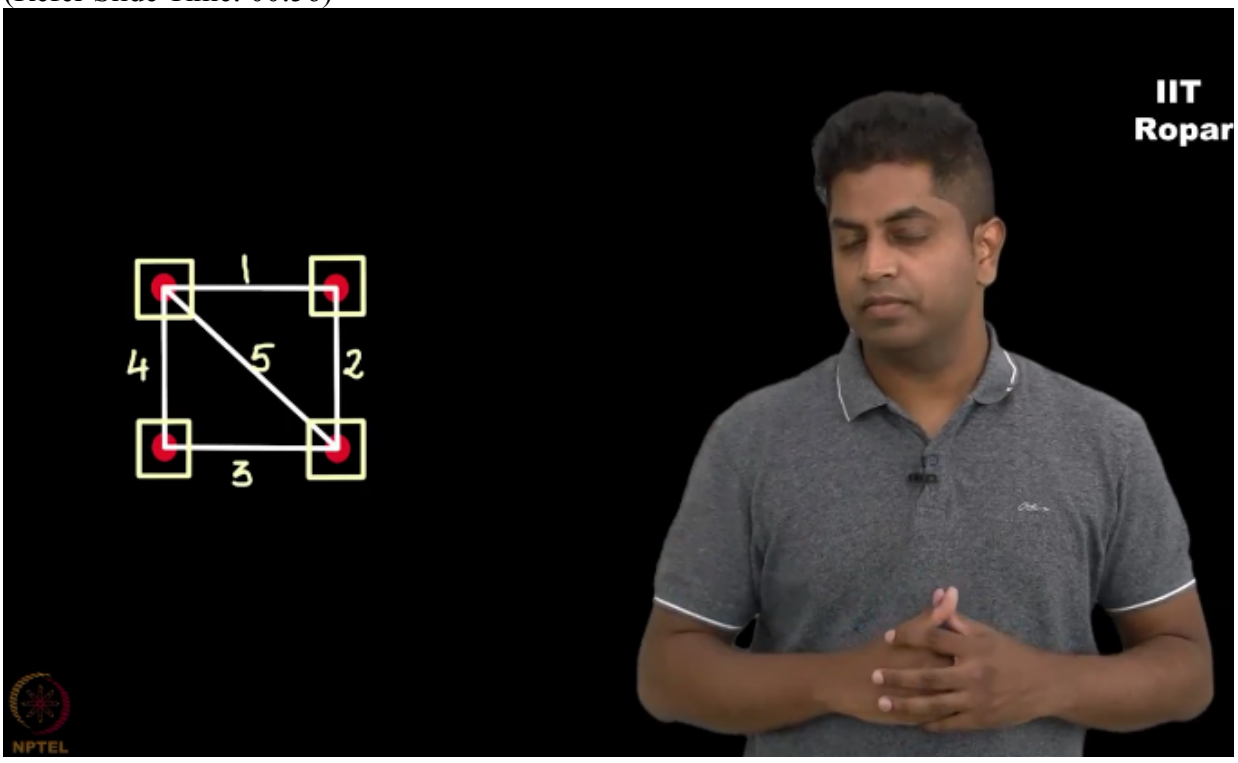

right, how many regions do you have? 1, 2, 3,
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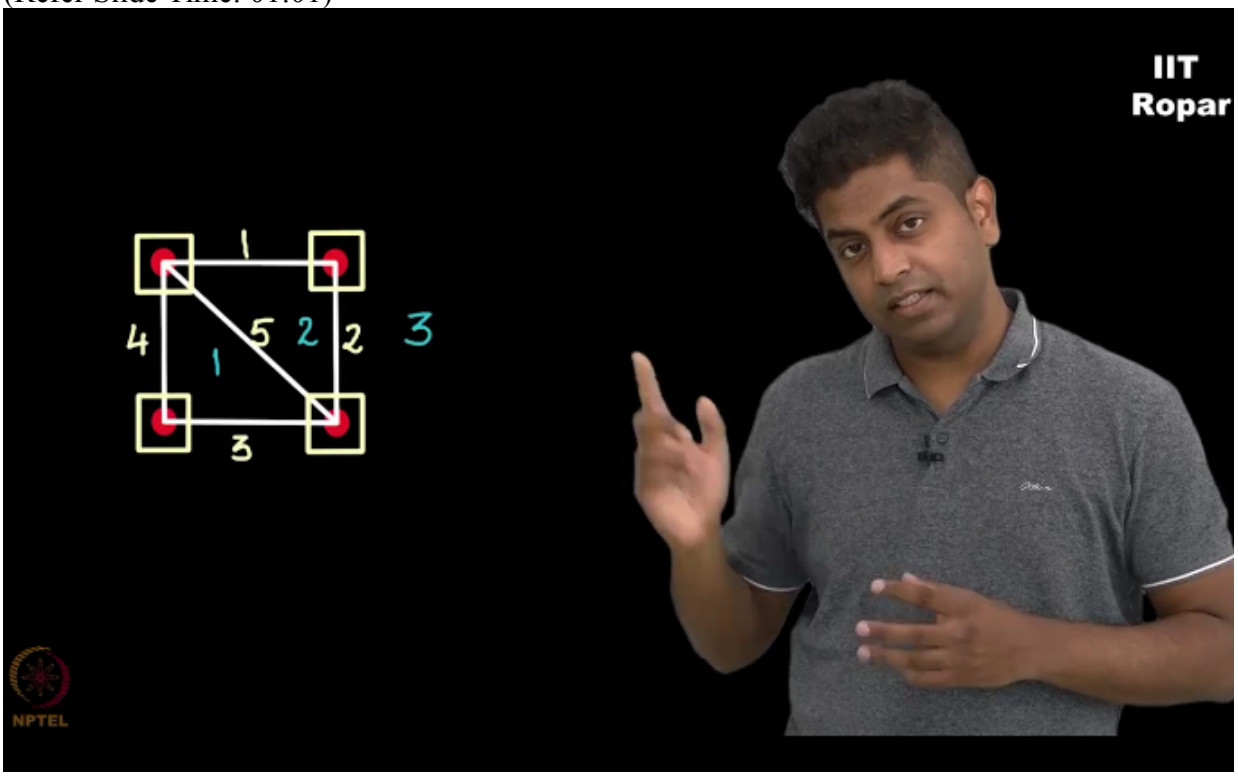

now you know what you mean by regions, correct, a surprising fact you take any planar graph, as you'd have observed you can take about regions only for planar graphs, right, if you take a planar graph count the number of vertices, the edges, and the regions, surprisingly they are sort of connected and related, and surprisingly this is always true that V – E + R happens to be 2.
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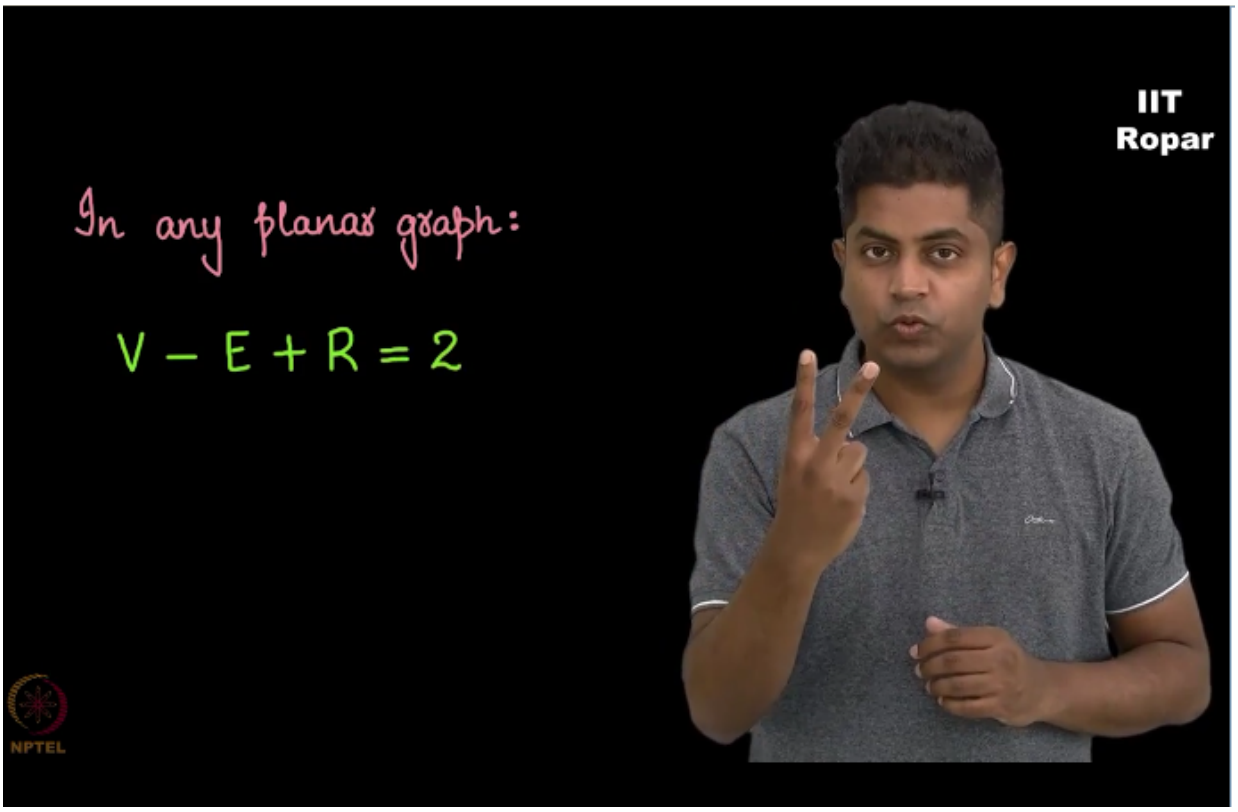

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