NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Set Theory

Power Set - Problems

With
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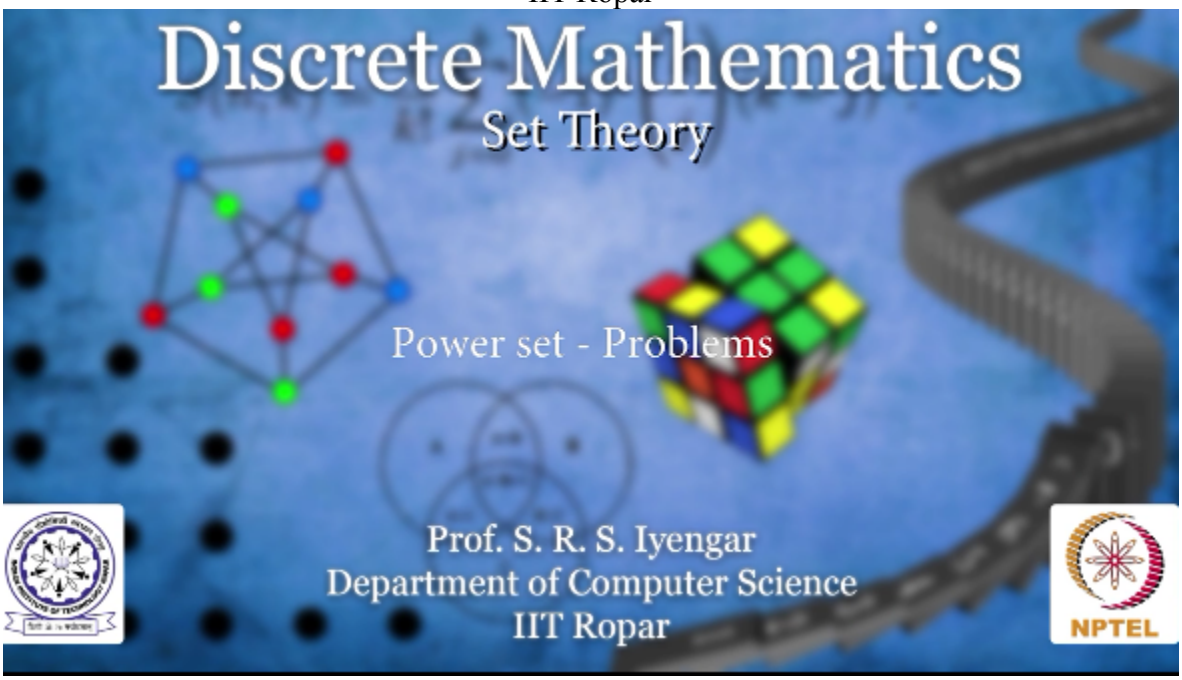
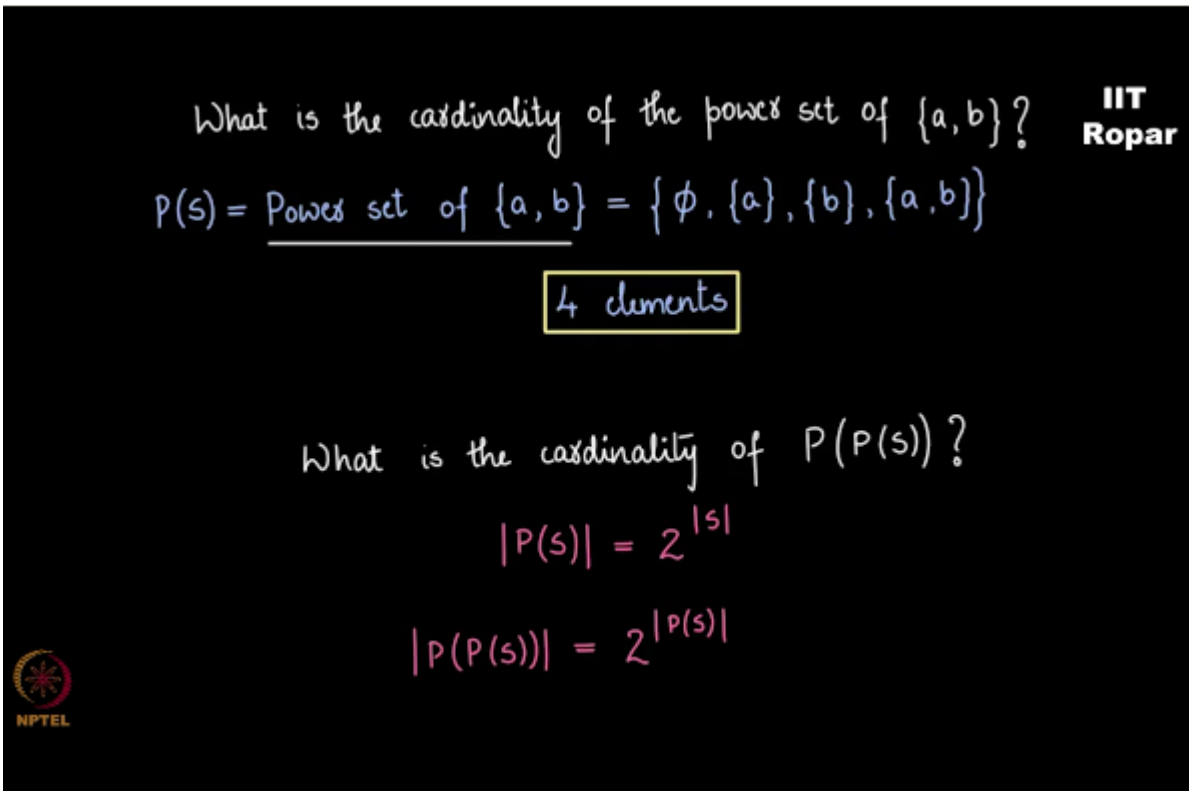


What is the cardinality of the power set of a set containing 2 elements let's say A and B, we know it is 2 square which is 4, but let us try enumerating it. What all will it have an empty set, a set containing only A, and a set containing only B, and a set containing both A and B, so precisely 4 elements.

Now let me ask you this question consider this set as another set, which set? Your power set of the previous set S, S was equal to A, B, you saw what was P(S), now my question is P(S) is again another set you see, one can talk about the power set of this power set, right, yeah I am just trying to give you a complicated question to challenge you people, so what will be the cardinality of a power set of a power set of a set S? Power set of S is 2 to the power of cardinality of S, and power set of this will simply be 2 to the power of the elements of P(S)



which is 2 to the power of cardinality of S, and now the answer will simply be 2 to the power of 2 to the power of cardinality of S, right, I was very quick in explaining the reason behind this, you may want to work out the details all by yourself.

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