NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Set Theory

Subsets- Part 3

With
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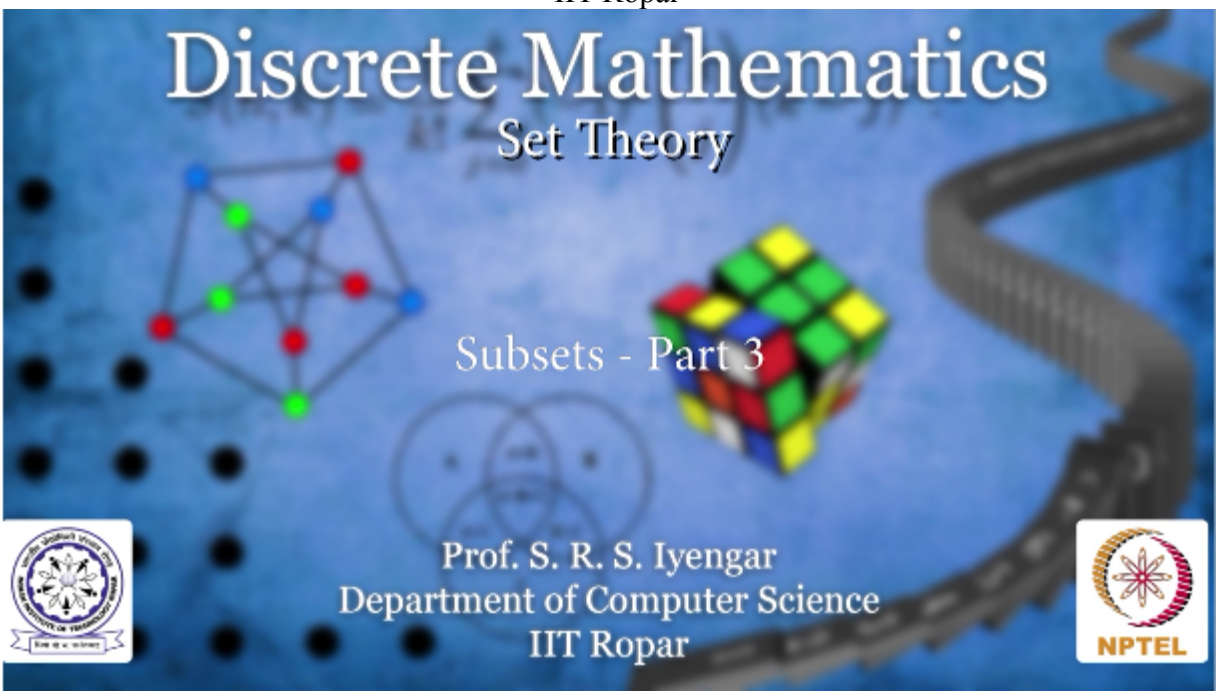
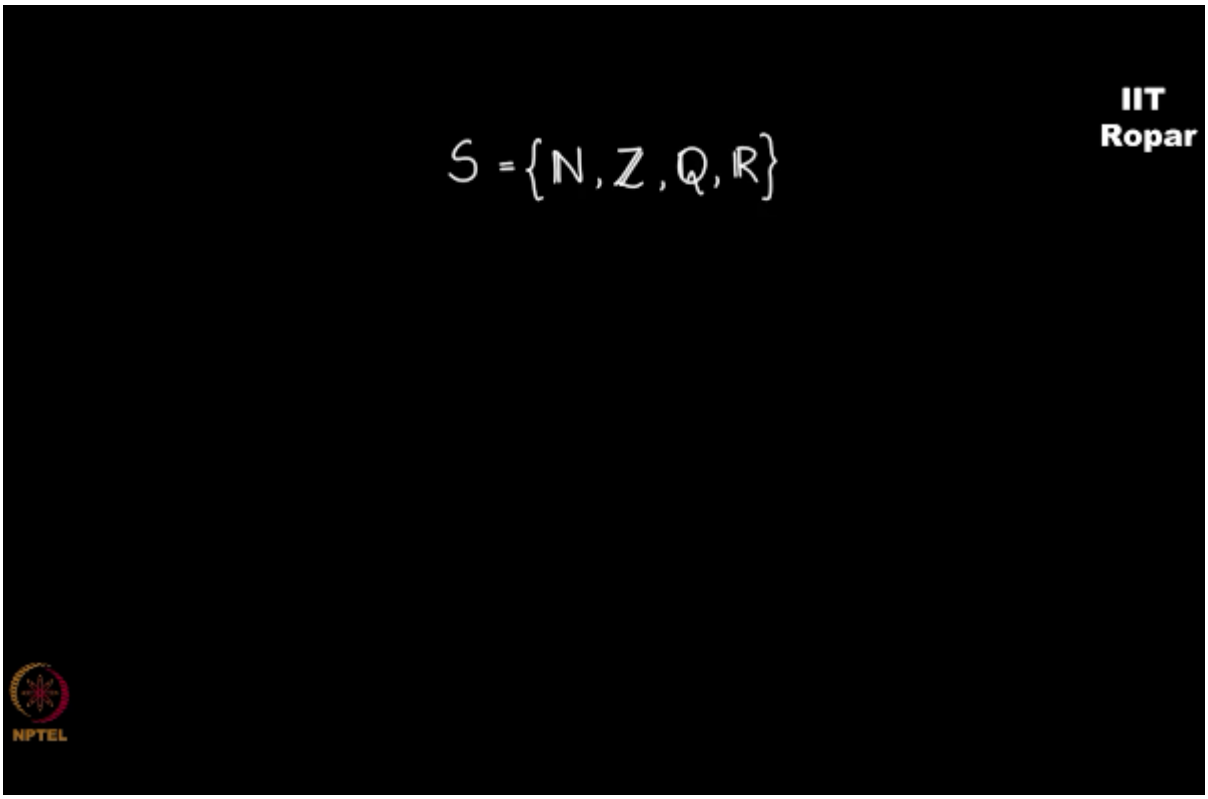
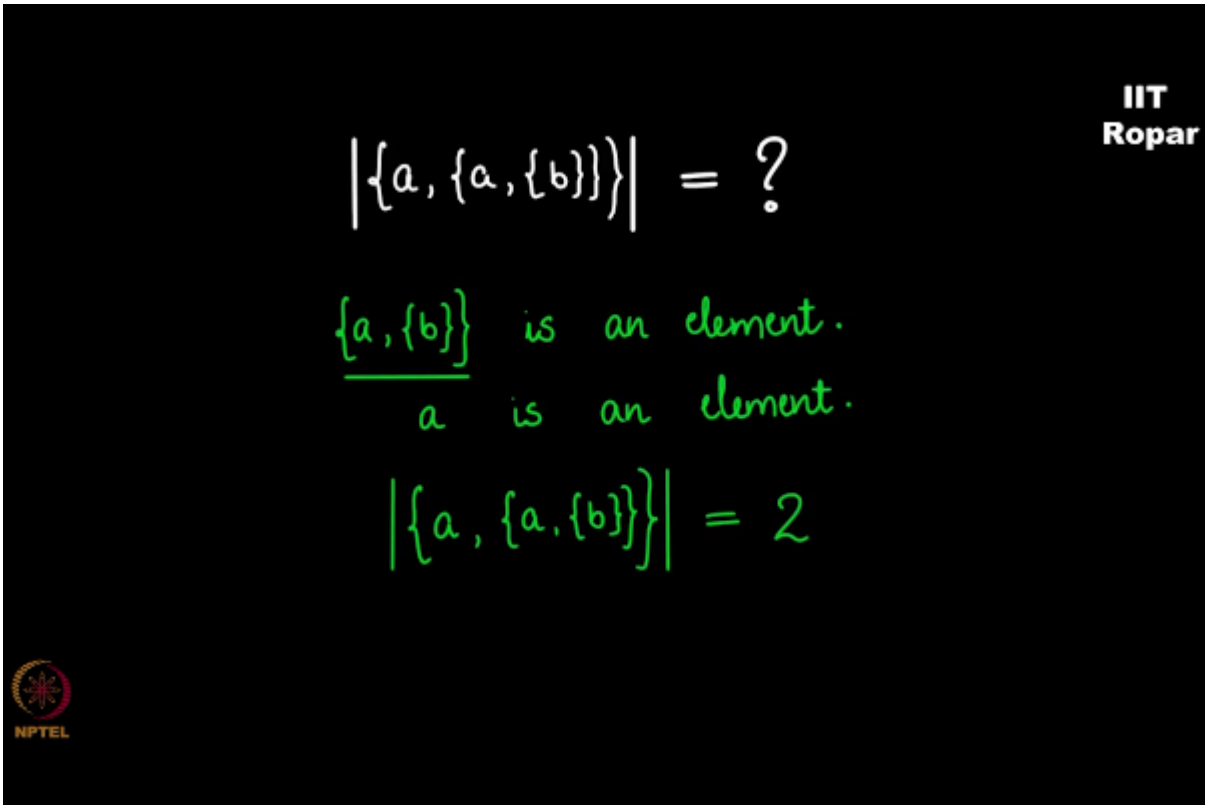


Consider a set as with natural numbers, integers, rationals, and real numbers in it, so what is a set? The set comprises of all natural numbers as a set, all integers as another set, all rational numbers as yet another set, and finally we have all real numbers too.

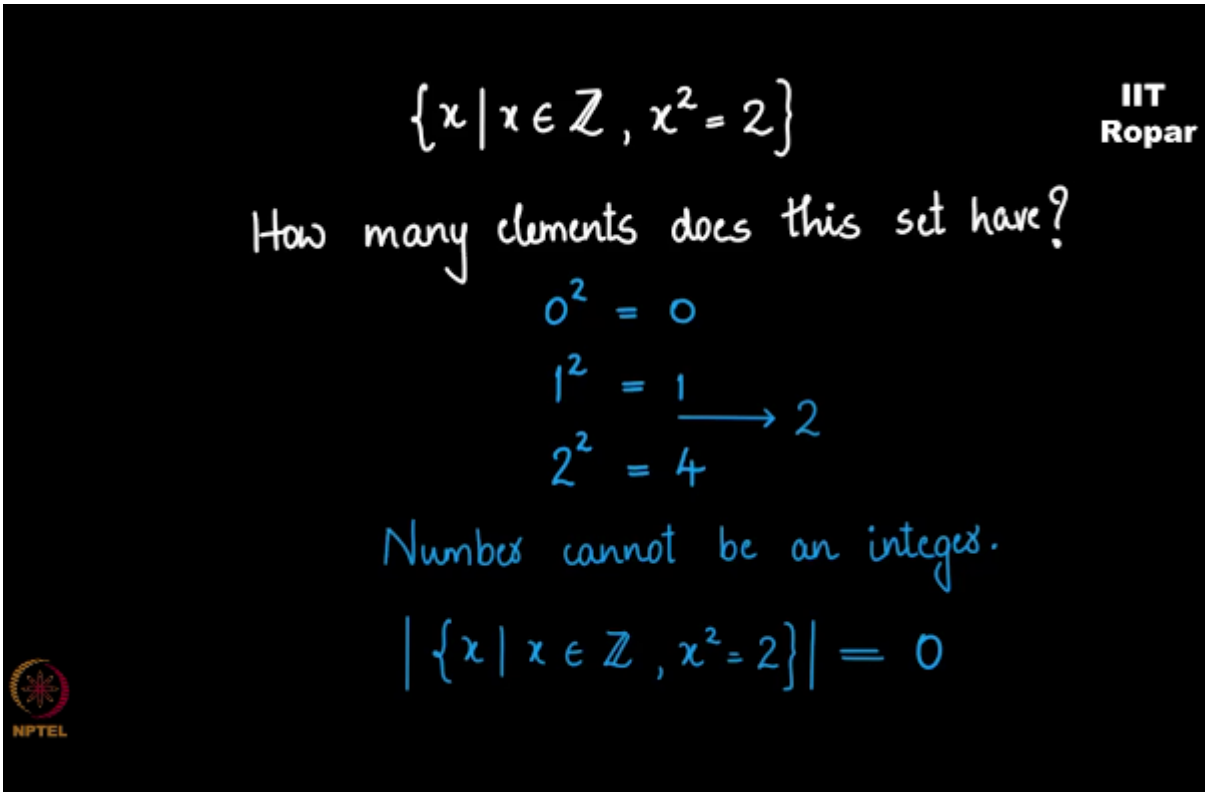


Now what is the cardinality of this set? This set simply comprises of 4 elements, N is an element, of course N is an infinite set in itself, but then we should consider it as an element, Z is an another element, Q is another and R is the fourth one, and hence the cardinality of S happens to be 4 here.

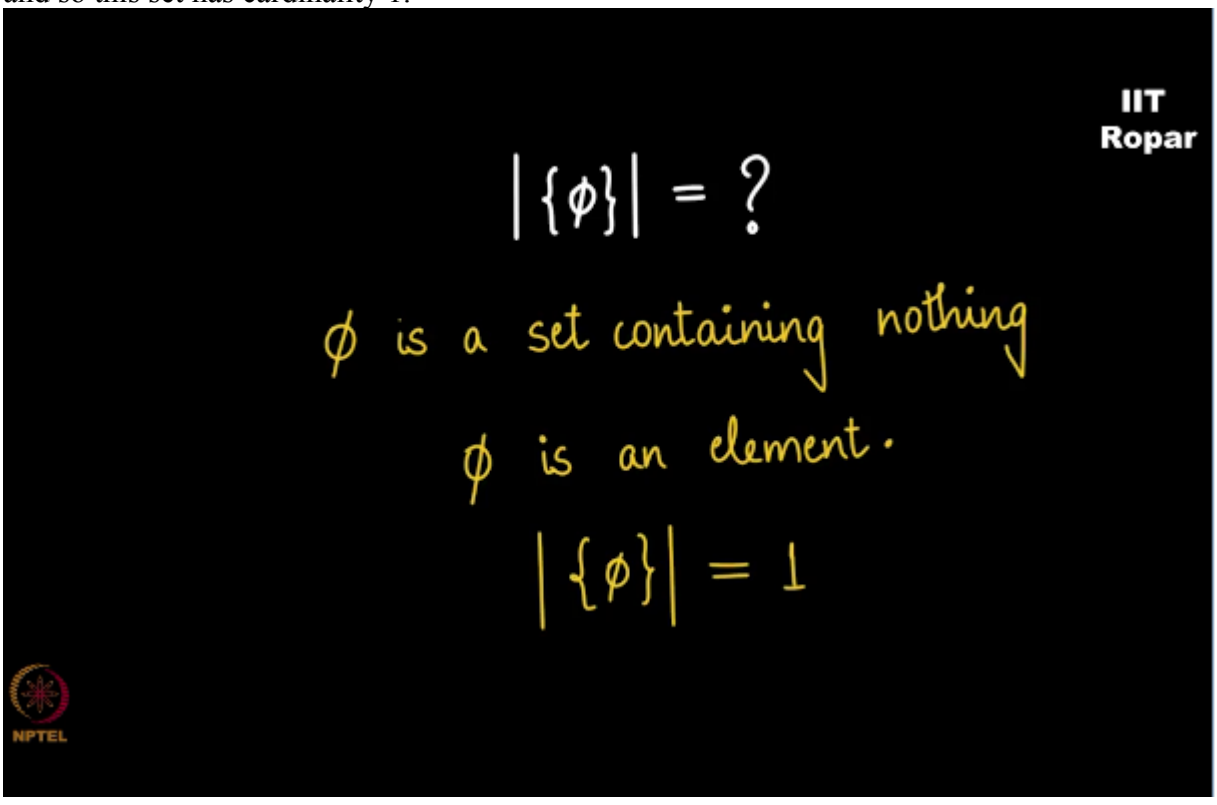
Now let's look at this question, a set comprising of A, and another set A, and a set B close the set, and close the set. How an element does the set contain? So this entire thing should be treated as one element, a set containing A and a set containing B inside the set all this things put together is a set, and A is another element. A is an element, and this stuff is another element



and hence the cardinality should be 2, okay, look at this set of all those numbers such that X is an integer, and X square is 2, that's what this notation denotes, look at the set how an elements do you have in this set? Okay, it is that number whose square is 2, not just that number it is that number whose square is 2, and that number should be an integer, is it even possible, 0 square is 0, 1 square is 1, 2 square is 4, a number between 1 to 4 is your 2, and the number whose square is 2 cannot be an integer and hence this set should be empty and hence the cardinality of this set should be 0.



What is the cardinality of a set containing fee the empty set, so fee as I told you, you should not see it as nothingness, fee is a set containing nothing and it can be treated as an element times, now if you put fee around brackets like this I would say here is a set containing one element and so this set has cardinality 1.



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