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SUMMARY KEYWORDS

intersect b, intersection, equal, overlap, lecture, dots, technical definition, talk, venn diagram, whoops, set, image, colon, portion, satisfy, intersect, picture, occurs, defined, line

SPEAKERS

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Welcome. In this lecture, I'm going to talk about intersections, which is kind of like the overlap of two sets. So let's kind of look at it could be more than two, but we're just going to talk about two at the moment. So again, we kind of have this setup, where we have that we have these two sets. So we have a set A, and a set B. So A and B are sets. So A and B are going to be sets. And then we're going to kind of have this favorite example in mind for more than one lecture here. So this is kind of our favorite example to look at, where we're going to have, so A is going to equal one, two, three.

And, or the set containing one and two and three, and then B is going to be the set that contains three and four and five. So each of these is a three element set. And then kind of in the image, so what is kind of an image of what we have here, is that we have, so you can imagine a line. And we have one, two, three, four, and five, and then I write here. So A contains one and two and three, so I make dots at one, and two, and three. I kind of do this one above, and then I do the other set, which is B below. So B contains three and four and five separate dots for three, and four, and five, okay. So what is the intersection of these, so notationally. So $A \cap B$, when I write like this, this is going to be the intersection. Oops, I meant to do this in red, we can still do it in red. Okay, so this is the intersection of A and B. So this is the intersection of A and B. Intersection of A and B.

Okay, and the technical definition here is, the technical definition which is going to be that so if I take $A \cap B$, like this said $A \cap B$, this is going to be a particular set. So what set is it? It's going to be defined to equal so I put this, it's like I put a colon with my equals means is defined to equal the set of all X satisfying that we have the X's in A and we also have the X is in B, so X is in A, and we also have that X is in B. Okay, so it has to satisfy both of those things. Okay, another way to kind of look at this, or some people would say this is the overlap of them. So it's the overlap of A and B. This set A and set B, we're kind of looking at where they overlap each other, with one of the ways that people often picture this is the Venn diagram. So if I have A here, and I have B here, whoops, B is orange, B here. Okay, then what is the intersect B, it's this portion right here.

Okay, so let's look back over at this example. Okay, um, there's only one that occurs twice. Okay. So this is the only number that has something both above and below. Okay? Um, so three is the only

this is the only number that has something both above and below. Okay. Oh, so three is the only number in the overlap in the overlap, i.e., in both A and B. Okay. So that's going to tell me that, so from here, this is going to tell me that with this particular example, we had that $A \cap B$, so we have the $A \cap B$ is going to equal just the set that contains three that, you know, it's going to be, let's just make that rhyme, why not? It's a set that contains three. That's it. Okay? So that would be the answer in that particular example, because that's the only thing that's in the overlap is three. So we look at the set that contains everything that's in the overlap. Okay? So intersections is looking at overlap. And so we can do that, you know, you can do that with numbers by doing something like this. So a lot of different ways to do, keep straight in your mind how to do it, but I hope that helps. And I'll see you in the next lecture.