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SPEAKERS

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Welcome. In this lecture, I want to talk about some ways to write a set. Set notation is a little bit tricky for a lot of people. So you're just going to have to kind of bear with us, and then over time, you'll start to get used to it. So here we go. So how do we write? So we'll start out by looking at a particular example. And so the question is how do we write this interval? So we have 4.5, right? And this is kind of curved and open on that side. And then we have seven, like this. Okay, so how do we write 4.57? Or other infinite sets for that matter? So, or other infinite sets?

Okay, so how do we write this interval or other infinite sets in set notation, in set notation. And again, bear with me and try to practice it a little bit, and you'll get the hang of it. So here we go. So here, we have this, so we have the set. So if I write this, like this, and then I put the set, and I have something on this side, you'll see what I mean by this, an example, it'll start to make more sense. Usually put a line or a colon in the middle, it differs from person to person. And then maybe I have a B here, and then a colon, like in the, to close these parentheses. So what does this mean? So first, I'll write it, I think it'll become more clear when we actually kind of do some examples. So what does this mean? So what this means is that everything of the form so that we can think of this as everything of the form A, the form A, right whatever this A is, satisfying.

Satisfying whatever this condition B is. Okay, so let's look at that particular example. In particular, the example that I wrote about there. Okay, so this tells us that we can write so, we can write, okay, um, well, what is this interval? Okay, this interval, if I look at this here, let me kind of draw it out for you. So this is the interval where I have, right? And because this is open on this side, so this is just my number line, this is just the real numbers. And then I need to focus in on these two, right? And because so this is curved on the side, right? This means this is open here. Okay, so this is at 4.5. So this is not included. Right, 4.5 is not included there. Okay? And then on the other hand, we have the seven is included.

Okay, like this. So this is included. Right? Right, because that's kind of round, it looks like you're kind of missing something there. This is boxy, or actually it kind of looks like you're including something like that. And we're having everything in between. Okay, so this is kind of the interval that we're

like that. And we're having everything in between. Okay, so this is kind of the interval that we're looking at. So how do we write this? So we're going to write this as, so we're going to use an inequality here. And we're going to write this as the set of all, so we can write this interval. So we can write that, so we can write 4.57 , right, as the set of all right, this is a set of all. Well, the first thing is we have to place ourselves on the real line, right? Before I put any conditions I need to know am I talking about real numbers? Am I talking about integers? What am I talking about? Complex numbers? You probably haven't seen those yet they exist, right? All these kinds of things. So I'm going to set myself as actually living in the real numbers. So this is like my condition A, is I'm living in the real numbers. So I'm talking about some of the real numbers. But I need to have some conditions on what they satisfy. And so what do they satisfy here? So these conditions are, I want to be, right, so I'm going to have 4.5 is less than. So this I'm also kind of setting the variable so that it makes sense when I write this over here, is less than X , is less than or equal to seven. Okay, just like that.

Okay, so what did I do? And then, then I'll make, and then I'll make a little remark. So what I did so far was, I said, okay, I'm going to have these kinds of curly brackets, and I want to talk about something on the left hand, I'm going to kind of talk about what kinds of elements I'm talking about. So here I'm talking about real numbers. So those are on the left hand side. On the right hand side, I'm kind of putting conditions on them. And one of the nice things that I did on the left hand side that was helpful in that circumstance, right, was that I use this variable X when I was saying that this meant that X is containing the real numbers. So I use that variable X containing the real numbers. And then I could put conditions on what X satisfies. Okay? So this is the set of all, right, the set of all real numbers. So these parts here, tell me I'm looking at, right, so by these, I know that I've got the set of all, right, and then this part here tells me that I'm talking about real numbers. Next, and then the part over there tells me satisfying, right, so this here is kind of like satisfying. And then I can look at what the orange told me there. And this is where I have 4.5 is less than X is less than or equal to seven. Okay? So there's something kind of interesting about this circumstance, which is that I couldn't actually list all the numbers in my set, right? I've got, there's infinitely many numbers in here. I can't just list them. And so I, you know, I have to kind of set a different way of explaining what's in there. But in the next time, we'll kind of talk about circumstances where you could actually list all the elements of the set. Okay, so I hope that made some sense, and I'll see you in the next lecture.