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SPEAKERS

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Welcome. So in this lecture, I just want to go through one more example of kind of looking at inequalities and finite sets. So this is kind of the second part of this, and in this one we're looking about, so a question. So now we want to know, can we write, we've got a difference that we want to look at. So we want to look at the set, we want, we want to look at the set where I'm going to have the set of all. So again, this means I'm just looking at integers. When I say the set of all X in, remember this funny Z thing means the integers, and this means in. So I'm looking at all integers in here, that are going to be satisfying that, so we want to have now we want to have 4.5 is less than X is less than or equal to 7 . Okay? So can we write this more simply?

We're here, our picture is so again, you kind of want to start with a smaller integer and make sure that we go past the bigger integer. So start on the left of here, go to the right of there, just to kind of make sure we have enough room on there to capture what we want. We want to start at 4.5 , but now we don't want to include it. So we do an open circle like that. And we want to run up to 7 , we do want to include 7 here within a closed in circle like that. Okay, so this is 7 . And what we have going on here is the interval, right, open with 4.5 , close with 7 . Okay, so what is the answer to this one? And we're going to do a little bit less breaking this one down, because we did the other one so fully, but we'll let's think about this one for a moment. Okay, so we look at the left hand side, and 4.5 is not included, it's also not an integer, so they are definitely leaving that one out. Okay. Now, as we go through 5 and 6 are integers, and they're in the interval, so we're gonna include them. And then once we get to this side, we have seven, which is an integer, and is included in the interval because this is kind of filled in here. So my answer is actually going to be here we have $5, 6, 7$. So the difference being that now we've included 7 , okay. And it didn't matter that before 4.5 was filled in. And now it's not because 4.5 is not an integer. Right? So the only difference here is that we've added in 7 . Okay. And so we just kind of note here, so what's kind of the, the key takeaway here is that seven is now included because it's in this interval that we're interested in. And it's also an integer.

Okay, so then, let's kind of like talk a little bit about going forward. So, so question for going forward, right, so our observations here is that both of these sets that we've been looking at. So last time we looked at so the set of all $oops$, that should be the set of all X in the integers. Doesn't really matter,

but just to make it consistent, where we had that 4.5 is less than or equal to X is less than 7. And the set of all X in the integers such that 4.5 is less than X is less than or equal to 7, right? Because we restricted to the integers. These were both finite sets, right? I could just list them out finitely.

Right, so how would we handle a set like the even numbers which is not finite? You can't just list it out in a finite amount of time. Okay, so what about a set like the even integers? And we will cover that next time. Okay, so in this lecture, this is very similar to the last example, we just kind of switched, which was an inclusive inequality or not, and it actually, it meant that we picked up 7, because 7 was an integer and one of the end points between integers were the same. And it didn't matter that we got rid of 4.5 there because 4.5 wasn't included in the other set either because it's not an integer. So in both these cases, we were just able to list out these elements in a set, so this is kind of the set including 5, 6, and 7. But these were all finite set to turned out when I followed all the rules, and I just took the numbers it satisfied both of these rules. It got something that was finite. But sometimes we're going to want to talk about sets that are not finite. So we're going to talk about that in the next lecture.