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SPEAKERS

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Welcome. In this lecture, I kind of want to illuminate a little bit about the meaning of when we talk about the limit as X approaches A of F of X equals L , because this is something that's showing up when we're talking about derivatives. So if I had the limit, let's talk about the limit as, and I want to have X is going to approach A , and then I have of this function F where my input is X . So when I write that this equals L , okay, so what do I mean by this? Okay, so what this means is, is that I can make the F of X values, so I can make the F of X values, so I have these F of X values, as close as I'd like to L . So I can make the X values, this F of X values, as close as like to L , wait, this L is this L here, okay, by making X close enough to A . So by making X , right, my input variable, close enough to the specific input variable I'm interested in, which is A , so close enough to this kind of special input value of A , okay? So let's look at this on a picture.

So if I have here that I have over here, I'm going to have my X and then this is my Y . Right, and then I have this kind of graph of this function Y equals F of X . Okay, and then I have this very specific value A that I'm interested in. Maybe put this value A here, okay? And then what does it mean? It means that right, so as X approaches A , so as these X values get very close to A , so as X approaches, so as these X values approach A , so as X approaches A , so it's getting close to X equals A , then if I looked up at what's happening, right? So on here, so if I went kind of, right, so what's going to happen to F of X here, is that F of X is going to approach L here. Okay, so it's going to get very close here, okay, to that value L , okay. So this is like having L here, okay? So in order, I can get as close as I want to this L value as my output by getting X values that are as close, you know, close enough to A , okay? So you can start with something close to L . And then you kind of say, you know, I want to be within epsilon of L , and then the question, and then I can choose a delta so that as long as I'm within delta of A , I end up epsilon close to L . That's kind of actually the technical, mathematical way of doing that, which is very good for proofs. It's also good, like this is usually enough to understand what you're doing for your purposes. But if you see people talking about deltas and epsilon, that's what they're talking. Okay. So, I hope that made some sense, and I'll see you in the next lecture.