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SPEAKERS

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Welcome. In this lecture, I'd like to go through two examples of graphing two variable functions just to get you started on getting used to what this can actually look like. So the first example I want to go through is, so in this one, my function is going to be, it's going to be a constant function, so it's going to be the constant function F of X , Y equals 5. So what will happen, so we have, we have here, our X and our Y . And then another, maybe Z is kind of going up, like this. And then what's actually happening here is that when you look at the graph of this function, we're looking at something that's at height 5, right? And the graph is going to kind of look like, you know, a plane that's just sitting there, right, at the height 5, so imagine something kind of flat floating in the air like this. So this is Z equals F of X , Y equals 5. So if I had a point here, you can imagine I could have a point like this, A , B . And then if I went upward, no matter what the point was, I would end up with the point on here being A , B , and then everything here is at height 5, right? So this is A , B , F of A , B .

Right? But that is actually in this circumstance, this is going to equal, it's just going to equal A , B , and then this 5 no matter what, okay? So it's just kind of this play with this, this kind of floating in the air at height 5. So maybe that's how you can picture this. So that was the first example I wanted to go through. And then here's another example I wanted to go through. It's just kind of nice. So let's take F of X , Y is now going to equal, so we're going to have X squared plus Y squared. Okay, so let's think about this for a moment. So we know that if I had, so if I fixed a particular output, so I know that X squared plus Y squared equals K is a circle of radius. So this is a circle of radius the square root of K , right? So one way to kind of think of that, is that, right, because this would be what I would get when my output is K . So if I have here, so I have my, I'm going to make my X and my Y axes here. And then I have this going up like this. Right? So this is my Z . And every time I'm at a height K on here, right, I'm going to get a circle of radius, right? This is always going to be a circle of radius of the square root, so this radius here is going to be the square root of K . Right? So you can imagine this is going to kind of go like this. So if I have zero, I'm at height zero, I'm a circle of radius zero, and it's just going to get bigger, kind of like this.

Okay? So, so you could kind of figure this out, I mean, you could also create this relationship between like, you can look at where it intersects when having Y equals zero or X equals zero and so on. Okay? But, I just wanted to go through these two examples because, so this one is actually something that's

called, this is, this has, you know, circular symmetry. But just kind of playing like this, like noticing that at each height, I have to have a radius of the square root of K , if K is the height or something like this. To kind of work through it and play with it can be really helpful in trying to find the graph of the function. Okay, so I hope it was a little bit helpful, and keep playing, and I will see you in the next lecture.