IIT Madras

ONLINE DEGREE

Mathematics for Data Science 1
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Week 08- Tutorial 3

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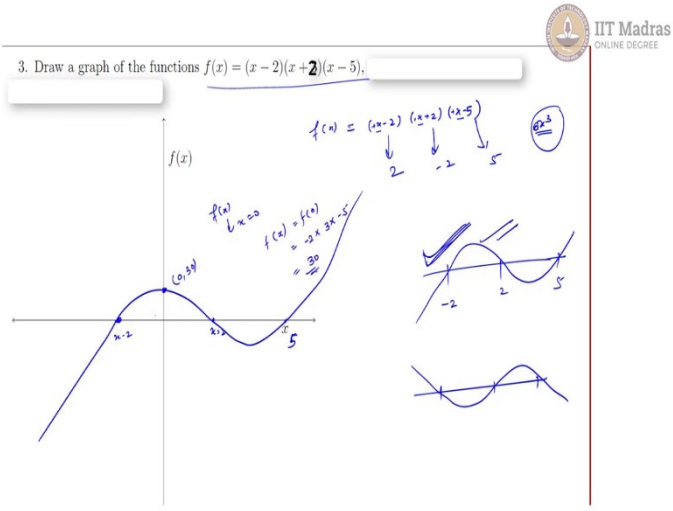

For our third question, we are getting a function, which is given in its intersect form. So, what is given actually, x -2 x +2 and x -5. So, this is actually 3 degree polynomial or function. And if it is given intercept form, it means we can clearly find the intercepts. So, this will give to this will be-2 and this will give 5, which means the curve will cross the x axis at these 3 points, what are those points, x =2, x =-2, x =5.

Now, the next thing is, is that how the curve will look like? If we are getting 3 intercepts, it means the curve will have 2 turning points, what does it mean? This is-2, this is 2 and this is 5, the curve will have 3 to 2 turning points, and those 2 turning points will be between 2 intercepts. So, this could be like this one case and the other case will be this and this which we, which I will take that will be dependent on the coefficient of the x^3.

So, coefficient of x^3 we will get x , x , x when we multiply these 3, we will get x^3. So, this is + this is + and this is +. So,+ and +. So, we will get positive coefficient of x^3 and positive coefficient of x^3 means, we will get this type of graph. Why? Because end behaviour shows if this is positive, the coefficient is positive we will get ∞ at x =∞ and-∞ at x =-∞. So, when this is pass then, we can understand that we have only one option to draw the graph and that will be this.