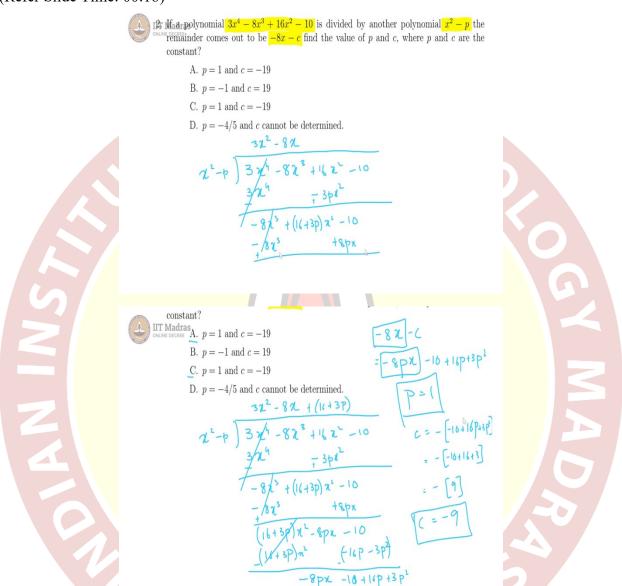


IIT Madras ONLINE DEGREE

Mathematics for Data Science 1 Week 06 – Tutorial 02

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In question number two, there is this polynomial, $3x^4 - 8x^3 + 16x^2 - 10$ and is divided by another polynomial $x^2 - p$, then the remainder comes out to be -8x - c. They are saying find the value of p and c. So, let us do the division, then, we have $3x^4 - 8x^3 + 16x^2 - 10$ and here we have $x^2 - p$.

So, this gives us $3x^2$ to start with and so this will be $3x^4 - 3px^2$, so we should write it there, $-3px^2$. And this goes off, and we get $-8x^3$ + this becomes +. So, $16 + 3px^2 - 10$. So, now we have -8x coming up here, which gives us $-8x^3 + 8x$, so +8px and this goes off again.

So, we have $16+3px^2-8px-10$. So, we again multiply by 16 plus 3p here, and that gives us $16+3px^2$. And there is no x term, we get minus $16p-3p^2$, then this of course cancelled again. So, we are left with $-8px-10+16p-3p^2$, because this is being subtracted.

So, they are saying this remainder is -8x - c. And that is equal to $-8px - 10 + 16p - 3p^2$. So, the x terms have to be the same here, which gives p = 1. And then c would be the negative of $-10 + 16p + 3p^2$, which is equal to the negative of -10 + 16 + 3. So, that is the negative of 9, and so we get -9.

And that will indicate that none of the options are correct. So, this probably was supposed to be -9. We observed that option A and option C are in fact the same thing. So, one of this was probably supposed to be -9. Anyway, so our answer is that p=1, and c=9.

