How do we know if a Polynomial is a Factor of Another Polynomial? Part 2

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In the previous segment, we learnt how to find if a **polynomial is a factor of another.** In this segment, we will look at one more example.

Example

Q. Find out if $1+2m$ **is a factor of** $4m+3+m^2+2m^3$.

Solution:

Arranging the terms of the dividend in descending order of the power of its variables gives

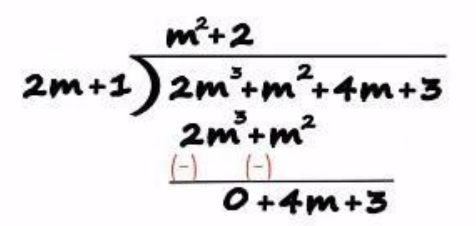
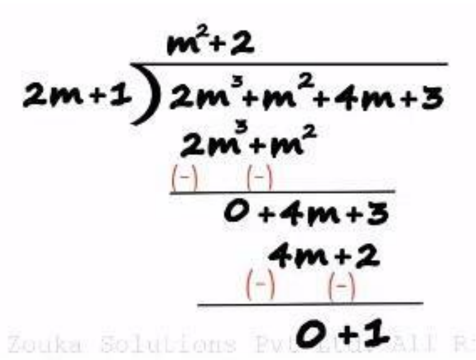
$$\frac{2m^3+m^2+4m+3}{2m+1}$$

Degree of the divisor (1) < Degree of the dividend (3).

Thus, the division can be carried out as follows:

$$2m+1\overline{)2m^3+m^2+4m+3}$$

Divide the first term of the polynomial with the first term of the divisor and write the result on top. This is the first term of the quotient.	$\begin{array}{r} m^2 \\ 2m+1\overline{)2m^3+m^2+4m+3} \end{array}$
Using the distributive property, multiply the quotient's first term with the terms of the divisor and write it under the first two terms of the dividend. Subtract the two expressions.	$\begin{array}{rl} & m^2 \\ 2m+1 & \overline{)2m^3+m^2+4m+3} \\ & 2m^3+m^2 \\ & \underline{(-)\quad(-)\qquad\qquad} \\ & 0 \end{array}$

Bring the remaining terms of the dividend down. Divide the first term of the new polynomial with the first term of the divisor. This is the second term of the quotient	
Using the distributive property, multiply the quotient's second term with the terms of the divisor and write it under the next two terms of the dividend. Subtract the two expressions. This is the end of the division. There are no more terms to divide and most importantly, the degree of the remainder is less than the degree of the divisor.	

Since the remainder is not zero, {2m+1} is not a factor of $2m^3 + m^2 + 4m + 3$.

What's next?

In the next segment of Class 8 Maths, we will learn about **Graphs.**