

FlexiPrep

CBSE Class 10-Mathematics: Chapter – 2 Polynomials Part 10 (For CBSE, ICSE, IAS, NET, NRA 2022)

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Question 5:

Give examples of polynomials $p(x)$, $g(x)$, $q(x)$ and $r(x)$, which satisfy the division algorithm and

(i) $\deg p(x) = \deg q(x)$

(ii) $\deg q(x) = \deg r(x)$

(iii) $\deg r(x) = 0$

Answer:

(i) $\deg p(x) = \deg q(x)$

Let $p(x) = 3x^2 + 3x + 6$, $g(x) = 3$

$$\begin{array}{r} x^2 + x + 2 \\ \hline 3 \overline{) 3x^2 + 3x + 6} \\ \underline{\pm 3x^2} \\ +3x+6 \\ \underline{\pm 3x} \\ +6 \\ \underline{\pm 6} \\ 0 \end{array}$$

So, we can see in this example that $\deg p(x) = \deg q(x) = 2$

(ii)

Let $p(x) = x^3 + 5$ and $g(x) = x^2 - 1$

$$\begin{array}{r} x \\ \hline (x^2 - 1) \overline{) x^3 + 5} \\ \underline{\pm x^3 \mp x} \\ x+5 \end{array}$$

We can see in this example that $\deg q(x) = \deg r(x) = 1$

(iii)

Let $p(x) = x^2 + 5x - 3$, $g(x) = x + 3$

$$\begin{array}{r} x + 2 \\ \hline (x + 3) x^2 + 5x - 3 \\ \pm x^2 \pm 3x \\ \hline + 2x - 3 \\ \pm 2x \pm 6 \\ \hline -9 \end{array}$$

We can see in this example that $\deg r(x) = 0$

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