Division of Algebraic Expressions Ex 8.5 Q2

Answer :

$$\left(\text{i}\right)\ \frac{2x^2+5x+4}{x+1}$$

$$=\frac{2x(x+1)+3(x+1)+1}{x+1}$$

$$=\frac{(x+1)(2x+3)+1}{(x+1)}$$

$$=\left(2x+3\right)+\frac{1}{x+1}$$

$\because$ Remainder $=1$

Therefore, $\left(x+1\right)$ is not a factor of $2x^2+5x+4$

$$\left(\text{ii}\right)\ \frac{3y^3+5y^2+5y+2}{y-2}$$

$$=\frac{3y^2(y-2)+11y(y-2)+27(y-2)+56}{y-2}$$

$$=\frac{(y-2)(3y^2+11y+27)+56}{y-2}$$

$$=(3y^2+11y+27)+\frac{56}{y-2}$$

$\because$ Remainder $=56$

$\therefore$ $(y-2)$ *is* not *a* factor *of* $3y^3+5y^2+5y+2.$

(iii) $\frac{4x^4+x^2+15}{4x^2-5}$

$= \frac{x^2(4x^2-5)+3(4x^2-5)+30}{4x^2-5}$

$= \frac{(4x^2-5)(x^2+3)+30}{4x^2-5}$

$=(x^2+3)+\frac{30}{4x^2-5}$

$\because$ Remainder $= 30$

Therefore, $(4x^2-5)$ is not a factor of $4x^4+7x^2+15$

(iv) $\frac{3z^2-13z+4}{4-z}$

$= \frac{3z^2-12z-z+4}{4-z}$

$= \frac{3z(z-4)-1(z-4)}{4-z}$

$= \frac{(z-4)(3z-1)}{4-z}$

$= \frac{(4-z)(1-3z)}{4-z}$

$=1-3z$

$\because$ Remainder $= 0$

$\therefore$ $(4-z)$ is a factor of $3z^2-13z+4$.

(V) $\frac{10a^2-9a-5}{2a-3}$

$= \frac{5a(2a-3)+3(2a-3)+4}{2a-3}$

$= \frac{(2a-3)(5a+3)+4}{2a-3}$

$=(5a+3)+\frac{4}{2a-3}$

$\because$ Remainder $= 4$

$\therefore$ $(2a-3)$ is not a factor of $10a^2-9a-5$.

(vi) $\frac{8y^2-2y+1}{4y+1}$

$= \frac{2y(4y+1)-1(4y+1)+2}{4y+1}$

$= \frac{(4y+1)(2y-1)+2}{4y+1}$

$=(2y-1)+\frac{2}{4y+1}$

$\because$ Remainder $= 2$

$\therefore$ $(4y+1)$ is not a factor of $8y^2-2y+1$.

********** END **********