



Division of Algebraic Expressions Ex 8.5 Q1

Answer :

$$\begin{aligned} & \left(\text{i} \right) \frac{3x^2 + 4x + 5}{x - 2} \\ &= \frac{3x(x - 2) + 10(x - 2) + 25}{(x - 2)} \\ &= \frac{(x - 2)(3x + 10) + 25}{(x - 2)} \\ &= \left(3x + 10 \right) + \frac{25}{(x - 2)} \end{aligned}$$

Therefore,

quotient = $3x + 10$ and remainder = 25.

$$\begin{aligned} & \left(\text{ii} \right) \frac{10x^2 - 7x + 8}{5x - 3} \\ &= \frac{2x(5x - 3) - \frac{1}{5}(5x - 3) + \frac{47}{5}}{(5x - 3)} \\ &= \frac{(5x - 3)\left(2x - \frac{1}{5}\right) + \frac{47}{5}}{(5x - 3)} \end{aligned}$$

$$= \left(2x - \frac{1}{5} \right) + \frac{\frac{47}{5}}{5x-3}$$

Therefore,

$$\text{quotient} = 2x - \frac{1}{5} \text{ and remainder} = \frac{47}{5}.$$

$$\begin{aligned} & \left(\text{iii} \right) \frac{5y^3 - 6y^2 + 6y - 1}{5y - 1} \\ &= \frac{y^2(5y-1) - y(5y-1) + 1(5y-1)}{(5y-1)} \\ &= \frac{(5y-1)(y^2 - y + 1)}{(5y-1)} \\ &= \left(y^2 - y + 1 \right) \end{aligned}$$

Therefore,

$$\text{Quotient} = y^2 - y + 1 \text{ and remainder} = 0$$

$$\begin{aligned} & \left(\text{iv} \right) \frac{x^4 - x^3 + 5x}{x-1} \\ &= \frac{x^3(x-1) + 5(x-1) + 5}{x-1} \\ &= \frac{(x-1)(x^3 + 5) + 5}{x-1} \\ &= (x^3 + 5) + \frac{5}{x-1} \end{aligned}$$

Therefore, quotient = $x^3 + 5$ and remainder = 5.

$$\begin{aligned} & \left(\text{v} \right) \frac{y^4 + y^2}{y^2 - 2} \\ &= \frac{y^2(y^2 - 2) + 3(y^2 - 2) + 6}{y^2 - 2} \\ &= \frac{(y^2 - 2)(y^2 + 3) + 6}{y^2 - 2} \\ &= \left(y^2 + 3 \right) + \frac{6}{y^2 - 2} \end{aligned}$$

Therefore, quotient = $y^2 + 3$ and remainder = 6.

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