

Exercise 2B

Question 8:

First we write the given polynomials in standard form in decreasing order of degree and then perform the division as shown below.

$$\begin{array}{r}
 3x - 1 \\
 \hline
 x^2 - x + 2 \overline{\smash)3x^3 - 4x^2 + 7x - 2} \\
 + 3x^3 - 3x^2 + 6x \\
 \hline
 -x^2 + x - 2 \\
 \hline
 \underline{-x^2 + x - 2} \\
 \hline
 0
 \end{array}$$

Clearly degree (of remainder) = $0 < degree(x^2 - x + 2)$

∴ Quotient =
$$(3x - 1)$$
, Remainder = 0
⇒ $(\text{Ouotient} \times \text{divisor}) + \text{remainder}$

$$\Rightarrow$$
 (Quotient \times divisor) + remainder

$$= (3x-1)(x^2-x+2)+0$$

$$=3x^3-3x^2+6x-x^2+x-2=0$$

$$=3x^3-4x^2+7x-2$$
 = dividend

Thus, (Quotient × divisor) + remainder = dividend Hence, the division algorithm is verified.

Question 9:

First we write the given polynomials in standard form in decreasing order of degree and then perform the division as shown below.

$$\begin{array}{r}
2x + 3 \\
-3x^{2} + 5x + 2 \\
-6x^{3} + x^{2} + 19x + 6 \\
-6x^{3} + 10x^{2} + 4x \\
+ - - \\
-9x^{2} + 15x + 6 \\
-9x^{2} + 15x + 6 \\
+ - - - \\

\hline
0$$
Clearly degree of remainder = 0 < degree

 $(-3x^2 + 5x + 2)$

∴ Quotient =
$$(2x + 3)$$
, remainder = 0
⇒ $(Quotient \times divisor) + remainder$

$$=(2x+3)(-3x^2+5x+2)+0$$

$$= -6x^3 + 10x^2 + 4x - 9x^2 + 15x + 6$$

$$\therefore -6x^3 + x^2 + 19x + 6 = dividend$$

= (Quotient x divisor) + remainder = Dividend

Hence the division algorithm is verified.

