Exercise 2B

Question 6:

The terms of dividend and divisor are in decreasing order

$$
\begin{array}{r|l}
 & 2x - 5 \\
\hline
x + 3 & 2x^2 + x - 15 \\
 & +2x^2 + 6x \\
 & \underline{-\quad\ -} \\
 & \quad -5x - 15 \\
 & \quad -5x - 15 \\
 & \quad \underline{+\quad\ +} \\
 & \qquad\quad 0 \\
\end{array}
$$

Clearly degree (of remainder) = 0 < degree (x + 3)

$\therefore$ Quotient = 2x − 5 and remainder = 0

$$
\begin{aligned}
\Rightarrow (\text{Quotient} \times \text{divisor}) + \text{remainder} &= (2x-5)(x+3)+0 \\
&= 2x^2 + 6x - 5x - 15 \\
&= 2x^2 + x - 15 = \text{dividend}
\end{aligned}
$$

Thus, (Quotient × divisor) + remainder = dividend

Question 7:

First we write the terms of dividend and divisor in decreasing order of their degree and then perform the division as shown below.

$$
\begin{array}{r|l}
 & x + 4 \\
\hline
-5x + 3 & -5x^2 - 17x + 12 \\
 & -5x^2 + 3x \\
 & + \quad\; - \\
\hline
 & \qquad -20x + 12 \\
 & \qquad -20x + 12 \\
 & \qquad + \quad\; - \\
\hline
 & \qquad\qquad 0 \\
\hline
\end{array}
$$

Clearly degree (of remainder) = 0 < degree (- 5x + 3)

$\therefore$ Quotient = x + 4 and remainder = 0

$\Rightarrow (\text{Quotient} \times \text{divisor}) + \text{remainder}$

$$= (x+4)(-5x+3)+0$$

$$= -5x^2 + 3x - 20x + 12 = 0$$

$$= -5x^2 - 17x + 12 = \text{dividend}$$

Thus, (Quotient × divisor) + remainder = dividend

Hence, the division algorithm is verified.

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