Exercise 2C

Question 7:

$f(x) = (4x^3 - 12x^2 + 11x - 5)$

Now, $2x - 1 = 0 \Rightarrow x = \frac{1}{2}$

By the remainder theorem, we know that

when f(x) is divided by (2x − 1) the remainder is $f\left(\frac{1}{2}\right)$

Now, $f\left(\frac{1}{2}\right) = 4\left(\frac{1}{2}\right)^3 - 12\left(\frac{1}{2}\right)^2 + 11\left(\frac{1}{2}\right) - 5$

$= 4 \times \frac{1}{8} - 12 \times \frac{1}{4} + \frac{11}{2} - 5$

$= \frac{1}{2} - 3 + \frac{11}{2} - 5$

$= \frac{1 - 6 + 11 - 10}{2}$

$= \frac{-16 + 12}{2}$

$= \frac{-4}{2} = -2$

∴ The required remainder is -2.

Question 8:

$f(x) = (81x^4 + 54x^3 - 9x^2 - 3x + 2)$

Now, $3x + 2 = 0 \Rightarrow x = \frac{-2}{3}$

By the remainder theorem, we know that

when f(x) is divided by (3x+ 2) the remainder is $f\left(\frac{-2}{3}\right)$

Now, $f\left(\frac{-2}{3}\right) = 81\left(\frac{-2}{3}\right)^4 + 54\left(\frac{-2}{3}\right)^3 - 9\left(\frac{-2}{3}\right)^2 - 3\left(\frac{-2}{3}\right) + 2$

$= 81 \times \frac{16}{81} + 54\left(\frac{-8}{27}\right) - 9\left(\frac{4}{9}\right) + 2 + 2$

$= 16 - 16 - 4 + 4 = 0$

∴ The required remainder is 0.

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