Exercise 2C

Question 9:

$f(x) = (x^3 - ax^2 + 2x - a)$

Now, $x - a = 0$ x $\Rightarrow = a$

By the remainder theorem, we know that when f(x) is divided by (x - a) the remainder is f(a)

Now, $f(a) = a^3 - a(a^2) + 2(a) - a$

$= a^3 - a^3 + 2a - a$

$= a$

∴ The required remainder is a.

Question 10:

Let $f(x) = ax^3 + 3x^2 - 3$

and $g(x) = 2x^3 - 5x + a$

∴ $f(4) = a \times 4^3 + 3 \times 4^2 - 3$

$= 64a + 48 - 3$

$= 64a + 45$

$g(4) = 2 \times 4^3 - 5 \times 4 + a$

$= 128 - 20 + a$

$= 108 + a$

It is given that:

$f(4) = g(4)$

$\Rightarrow 64a + 45 = 108 + a$

$\Rightarrow 64a - a = 108 - 45$

$\Rightarrow 63a = 63$

$\Rightarrow a = 63/63 = 1$

∴ The value of a is 1.

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