Exercise 2D

Question 1:

$f(x) = (x^3 - 8)$

By the Factor Theorem, (x - 2) will be a factor of f(x) if f(2) = 0.

Here, $f(2) = (2)^3 - 8$

$= 8 - 8 = 0$

$\therefore$ (x - 2) is a factor of $(x^3 - 8)$.

Question 2:

$f(x) = (2x^3 + 7x^2 - 24x - 45)$

By the Factor Theorem, (x - 3) will be a factor of f(x) if f(3) = 0.

Here, $f(3) = 2 \times 3^3 + 7 \times 3^2 - 24 \times 3 - 45$

$= 54 + 63 - 72 - 45$

$= 117 - 117 = 0$

$\therefore$ (x - 3) is a factor of $(2x^3 + 7x^2 - 24x - 45)$.

Question 3:

$f(x) = (2x^4 + 9x^3 + 6x^2 - 11x - 6)$

By the Factor Theorem, (x - 1) will be a factor of f(x) if f(1) = 0.

Here, $f(1) = 2 \times 1^4 + 9 \times 1^3 + 6 \times 1^2 - 11 \times 1 - 6$

$= 2 + 9 + 6 - 11 - 6$

$= 17 - 17 = 0$

$\therefore$ (x - 1) is factor of $(2x^4 + 9x^3 + 6x^2 - 11x - 6)$.

Question 4:

$f(x) = (x^4 - x^2 - 12)$

By the Factor Theorem, (x + 2) will be a factor of f(x) if f(-2) = 0.

Here, $f(-2) = (-2)^4 - (-2)^2 - 12$

$= 16 - 4 - 12$

$= 16 - 16 = 0$

$\therefore$ (x + 2) is a factor of $(x^4 - x^2 - 12)$.

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