Exercise 2I

Question 1:

(i) $(3x + 2)^3$

$= (3x)^3 + (2)^3 + 3 \times 3x \times 2\,(3x + 2)$

[Since $(a + b)^3 = a^3 + b^3 + 3ab\,(a + b)$]

$= 27x^3 + 8 + 18x\,(3x + 2)$

$= 27x^3 + 8 + 54x^2 + 36x.$

(ii) $(3a - 2b)^3$

$= (3a)^3 - (2b)^3 - 3 \times 3a \times 2b\,(3a - 2b)$

[Since $(a - b)^3 = a^3 - b^3 - 3ab\,(a - b)$]

$= 27a^3 - 8b^3 - 18ab\,(3a - 2b)$

$= 27\,a^3 - 8b^3 - 54a^2b + 36ab^2.$

(iii) $\left(\frac{2}{3}x + 1\right)^3$

$= \left(\frac{2}{3}x\right)^3 + (1)^3 + 3 \times \frac{2}{3}x \times 1\left(\frac{2}{3}x + 1\right)$

$\left[\because (a + b)^3 = a^3 + b^3 + 3ab\,(a + b)\right]$

$= \frac{8}{27}x^3 + 1 + 2x\left(\frac{2}{3}x + 1\right)$

$= \frac{8}{27}x^3 + 1 + \frac{4}{3}x^2 + 2x.$

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