



Exercise 2J

Question 5:

$$125a^3 + \frac{1}{8}$$

We know that  $a^3 + b^3 = (a + b)(a^2 - a \times b + b^2)$

Let us rewrite

$$125a^3 + \frac{1}{8}$$

$$\begin{aligned} &= (5a)^3 + \left(\frac{1}{2}\right)^3 \\ &= \left(5a + \frac{1}{2}\right) \left[ (5a)^2 - 5a \times \frac{1}{2} + \left(\frac{1}{2}\right)^2 \right] \\ &= \left(5a + \frac{1}{2}\right) \left( 25a^2 - \frac{5a}{2} + \frac{1}{4} \right). \end{aligned}$$

Question 6:

$$216x^3 + \frac{1}{125}$$

We know that  $a^3 + b^3 = (a + b)(a^2 - a \times b + b^2)$

Let us rewrite

$$216x^3 + \frac{1}{125}$$

$$\begin{aligned} &= (6x)^3 + \left(\frac{1}{5}\right)^3 \\ &= \left(6x + \frac{1}{5}\right) \left[ (6x)^2 - 6x \times \frac{1}{5} + \left(\frac{1}{5}\right)^2 \right] \\ &= \left(6x + \frac{1}{5}\right) \left( 36x^2 - \frac{6x}{5} + \frac{1}{25} \right). \end{aligned}$$

Question 7:

$$16x^4 + 54x$$

$$= 2x(8x^3 + 27)$$

$$= 2x[(2x)^3 + (3)^3]$$

$$= 2x(2x + 3)[(2x)^2 - 2x(3) + 3^2]$$

$$\text{Since } a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

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

\*\*\*\*\* END \*\*\*\*\*