



Exercise 6D

Q3

Answer :

We shall use the identities $(a+b)^2 = a^2 + b^2 + 2ab$ and $(a-b)^2 = a^2 + b^2 - 2ab$.

(i) We have:

$$\begin{aligned} & (8a + 3b)^2 \\ &= (8a)^2 + 2 \times 8a \times 3b + (3b)^2 \\ &= 64a^2 + 48ab + 9b^2 \end{aligned}$$

(ii) We have:

$$\begin{aligned} & (7x + 2y)^2 \\ &= (7x)^2 + 2 \times 7x \times 2y + (2y)^2 \\ &= 49x^2 + 28xy + 4y^2 \end{aligned}$$

(iii) We have :

$$\begin{aligned} & (5x + 11)^2 \\ &= (5x)^2 + 2 \times 5x \times 11 + (11)^2 \\ &= 25x^2 + 110x + 121 \end{aligned}$$

(iv) We have:

$$\begin{aligned} & \left(\frac{a}{2} + \frac{2}{a} \right)^2 \\ &= \left(\frac{a}{2} \right)^2 + 2 \times \frac{a}{2} \times \frac{2}{a} + \left(\frac{2}{a} \right)^2 \\ &= \frac{a^2}{4} + 2 + \frac{4}{a^2} \end{aligned}$$

(v) We have:

$$\begin{aligned} & \left(\frac{3x}{4} + \frac{2y}{9} \right)^2 \\ &= \left(\frac{3x}{4} \right)^2 + 2 \times \frac{3x}{4} \times \frac{2y}{9} + \left(\frac{2y}{9} \right)^2 \\ &= \frac{9x^2}{16} + \frac{1}{3}xy + \frac{4y^2}{81} \end{aligned}$$

(vi) We have:

$$\begin{aligned} & (9x - 10)^2 \\ &= (9x)^2 - 2 \times 9x \times 10 + (10)^2 \\ &= 81x^2 - 180x + 100 \end{aligned}$$

(vii) We have:

$$\begin{aligned} & (x^2y - yz^2)^2 \\ &= (x^2y)^2 - 2 \times x^2y \times yz^2 + (yz^2)^2 \\ &= x^4y^2 - 2x^2y^2z^2 + y^2z^4 \end{aligned}$$

(viii) We have:

$$\begin{aligned} & \left(\frac{x}{y} - \frac{y}{x} \right)^2 \\ &= \left(\frac{x}{y} \right)^2 - 2 \times \frac{x}{y} \times \frac{y}{x} + \left(\frac{y}{x} \right)^2 \\ &= \frac{x^2}{y^2} - 2 + \frac{y^2}{x^2} \end{aligned}$$

(ix) We have:

$$\begin{aligned} & \left(3m - \frac{4}{5}n\right)^2 \\ &= (3m)^2 - 2 \times 3m \times \frac{4}{5}n + \left(\frac{4}{5}n\right)^2 \\ &= 9m^2 - \frac{24mn}{5} + \frac{16}{25}n^2 \end{aligned}$$

Q4

Answer :

(i) We have:

$$\begin{aligned} & (x+3)(x-3) \\ &= x^2 - 9 \quad \left[\text{using } (a+b)(a-b) = a^2 - b^2 \right] \end{aligned}$$

(ii) We have:

$$\begin{aligned} & (2x+5)(2x-5) \\ &= 4x^2 - 25 \quad \left[\text{using } (a+b)(a-b) = a^2 - b^2 \right] \end{aligned}$$

(iii) We have:

$$\begin{aligned} & (8+x)(8-x) \\ &= 64 - x^2 \quad \left[\text{using } (a+b)(a-b) = a^2 - b^2 \right] \end{aligned}$$

(iv) We have:

$$\begin{aligned} & (7x+11y)(7x-11y) \\ &= 49x^2 - 121y^2 \quad \left[\text{using } (a+b)(a-b) = a^2 - b^2 \right] \end{aligned}$$

(v) We have:

$$\begin{aligned} & \left(5x^2 + \frac{3}{4}y^2\right)\left(5x^2 - \frac{3}{4}y^2\right) \\ &= 25x^4 - \frac{9}{16}y^4 \quad \left[\text{using } (a+b)(a-b) = a^2 - b^2 \right] \end{aligned}$$

(vi) We have:

$$\begin{aligned} & \left(\frac{4x}{5} - \frac{5y}{3}\right)\left(\frac{4x}{5} + \frac{5y}{3}\right) \\ &= \frac{16x^2}{25} - \frac{25y^2}{9} \quad \left[\text{using } (a+b)(a-b) = a^2 - b^2 \right] \end{aligned}$$

(vii) We have:

$$\begin{aligned} & \left(x + \frac{1}{x}\right)\left(x - \frac{1}{x}\right) \\ &= x^2 - \frac{1}{x^2} \quad \left[\text{using } (a+b)(a-b) = a^2 - b^2 \right] \end{aligned}$$

***** END *****

