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:

$$\left(8a + 3b\right)^2$$
$$= (8a)^2 + 2 \times 8a \times 3b + (3b)^2$$
$$= 64a^2 + 48ab + 9b^2$$

(ii) We have:

$$\left(7x + 2y\right)^2$$
$$= (7x)^2 + 2 \times 7x \times 2y + (2y)^2$$
$$= 49x^2 + 28xy + 4y^2$$

(iii) We have :

$$\left(5x + 11\right)^2$$
$$= (5x)^2 + 2 \times 5x \times 11 + (11)^2$$
$$= 25x^2 + 110x + 121$$

(iv) We have:

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

(v) We have:

$$\left(\frac{3x}{4} + \frac{2y}{9}\right)^2$$

$$= \left(\frac{3x}{4}\right)^2 + 2 \times \frac{3x}{4} \times \frac{2y}{9} + \left(\frac{2y}{9}\right)^2$$

$$= \frac{9x^2}{16} + \frac{1}{3}xy + \frac{4y^2}{81}$$

(vi) We have:

$$\left(9x - 10\right)^2$$

$$(9x)^2 - 2 \times 9x \times 10 + (10)^2$$

$$= 81x^2 - 180x + 100$$

(vii) We have:

$$\left(x^2y - yz^2\right)^2$$

$$(x^2y)^2 - 2 \times x^2y \times yz^2 + (yz^2)^2$$

$$= x^4y^2 - 2x^2y^2z^2 + y^2z^4$$

(viii) We have:

$$\left(\frac{x}{y} - \frac{y}{x}\right)^2$$

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

$$= \frac{x^2}{y^2} - 2 + \frac{y^2}{x^2}$$

(ix) We have:

$$\left(3m - \frac{4}{5}n\right)^2$$

$$= (3m)^2 - 2 \times 3m \times \frac{4}{5}n + \left(\frac{4}{5}n\right)^2$$

$$= 9m^2 - \frac{24mn}{5} + \frac{16}{25}n^2$$

Q4

Answer :

(i) We have:

$$\left(x + 3\right)\left(x - 3\right)$$

$$= x^2 - 9 \qquad \left[\text{using } \left(a + b\right)\left(a - b\right) = a^2 - b^2\right]$$

(ii) We have:

$$\left(2x + 5\right)\left(2x - 5\right)$$

$$= 4x^2 - 25 \qquad \left[\text{using } \left(a + b\right)\left(a - b\right) = a^2 - b^2\right]$$

(iii) We have:

$$\left(8 + x\right)\left(8 - x\right)$$

$$= 64 - x^2 \qquad \left[\text{using } \left(a + b\right)\left(a - b\right) = a^2 - b^2\right]$$

(iv) We have:

$$\left(7x + 11y\right)\left(7x - 11y\right)$$

$$= 49x^2 - 121y^2 \qquad \left[\text{using } \left(a + b\right)\left(a - b\right) = a^2 - b^2\right]$$

(v) We have:

$$\left(5x^2 + \frac{3}{4}y^2\right)\left(5x^2 - \frac{3}{4}y^2\right)$$

$$= 25x^4 - \frac{9}{16}y^4 \qquad \left[\text{using } \left(a + b\right)\left(a - b\right) = a^2 - b^2\right]$$

(vi) We have:

$$\left(\frac{4x}{5} - \frac{5y}{3}\right)\left(\frac{4x}{5} + \frac{5y}{3}\right)$$

$$= \frac{16x^2}{25} - \frac{25y^2}{9} \qquad \left[\text{using } \left(a + b\right)\left(a - b\right) = a^2 - b^2\right)\right]$$

(vii) We have:

$$\left(x + \frac{1}{x}\right)\left(x - \frac{1}{x}\right)$$

$$= x^2 - \frac{1}{x^2} \qquad \left[\text{using } \left(a + b\right)\left(a - b\right) = a^2 - b^2\right]$$

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