Exercise 6D

(viii) We have:

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

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

(ix) We have:

$\left(2a+\frac{3}{b}\right)\left(2a-\frac{3}{b}\right)$

$=4a^2-\frac{9}{b^2}$ $\quad\left[\text{using } (a+b)(a-b)=a^2-b^2\right]$

Q5

Answer :

We shall use the identity $(a+b)^2 = a^2 + b^2 + 2ab$.

(i)

$$(54)^2$$
$$= (50+4)^2$$
$$= (50)^2 + 2 \times 50 \times 4 + (4)^2$$
$$= 2500 + 400 + 16$$
$$= 2916$$

(ii)

$$(82)^2$$
$$= (80+2)^2$$
$$= (80)^2 + 2 \times 80 \times 2 + (2)^2$$
$$= 6400 + 320 + 4$$
$$= 6724$$

(iii)

$$(103)^2$$
$$= (100+3)^2$$
$$= (100)^2 + 2 \times 100 \times 3 + (3)^2$$
$$= 10000 + 600 + 9$$
$$= 10609$$

(iv)

$$(704)^2$$
$$= \left(700+4\right)^2$$
$$= (700)^2 + 2 \times 700 \times 4 + (4)^2$$
$$= 490000 + 5600 + 16$$
$$= 495616$$

Q6

Answer :

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

(i)

$$(69)^2$$
$$= \left(70-1\right)^2$$
$$= (70)^2 - 2 \times 70 \times 1 + 1$$
$$= 4900 - 140 + 1$$
$$= 4761$$

(ii)

$$(78)^2$$
$$= \left(80-2\right)^2$$
$$= (80)^2 - 2 \times 80 \times 2 + 4$$
$$= 6400 - 320 + 4$$
$$= 6084$$

(iii)

$$(197)^2$$
$$= \left(200 - 3\right)^2$$
$$= (200)^2 - 2 \times 200 \times 3 + 9$$
$$= 40000 - 1200 + 9$$
$$= 38809$$

(iv)

$$(999)^2$$
$$= \left(1000 - 1\right)^2$$
$$= (1000)^2 - 2 \times 1000 \times 1 + 1$$
$$= 1000000 - 2000 + 1$$
$$= 998001$$

Q7

Answer :

We shall use the identity $(a-b)\,(a+b)=a^2 - b^2$.

(i)

$$(82)^2 - (18)^2$$
$$= (82 - 18)(82 + 18)$$
$$= (64)(100)$$
$$= 6400$$

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