



Exercise 6D

(ii)

$$\begin{aligned}(128)^2 - (72)^2 \\&= (128 - 72)(128 + 72) \\&= (56)(200) \\&= 11200\end{aligned}$$

(iii)

$$\begin{aligned}197 \times 203 \\&= (200 - 3)(200 + 3) \\&= (200)^2 - (3)^2 \\&= 40000 - 9 \\&= 39991\end{aligned}$$

(iv)

$$\begin{aligned}&\frac{198 \times 198 - 102 \times 102}{96} \\&= \frac{(198)^2 - (102)^2}{96} \\&= \frac{(198 - 102)(198 + 102)}{96} \\&= \frac{(96)(300)}{96}\end{aligned}$$

$$= 96$$

$$= 300$$

(v)

$$(14.7 \times 15.3)$$

$$= (15 - 0.3) \times (15 + 0.3)$$

$$= (15)^2 - (0.3)^2$$

$$= 225 - 0.09$$

$$= 224.91$$

(vi)

$$(8.63)^2 - (1.37)^2$$

$$= (8.63 - 1.37)(8.63 + 1.37)$$

$$= (7.26)(10)$$

$$= 72.6$$

Q8

**Answer :**

$$(9x^2 + 24x + 16)$$

*Given,  $x = 12$*

$$\Rightarrow (3x)^2 + 2(3x)(4) + (4)^2$$

$$\Rightarrow (3x + 4)^2$$

$$\Rightarrow (3(12) + 4)^2$$

$$\Rightarrow (36 + 4)^2$$

$$\Rightarrow (40)^2 = 1600$$

Therefore, the value of the expression  $(9x^2 + 24x + 16)$ , when  $x = 12$ , is 1600.

Q9

**Answer :**

$$(64x^2 + 81y^2 + 144xy)$$

*Given :*

$$x = 11$$

$$y = \frac{4}{3}$$

$$\begin{aligned}
&\Rightarrow (8x)^2 + (9y)^2 + 2(8x)(9y) \\
&\Rightarrow (8x + 9y)^2 \\
&\Rightarrow \left(8\left(11\right) + 9\left(\frac{4}{3}\right)\right)^2 \\
&\Rightarrow (88 + 12)^2 \\
&\Rightarrow (100)^2 \\
&\Rightarrow 10000
\end{aligned}$$

Therefore, the value of the expression  $(64x^2 + 81y^2 + 144xy)$ , when  $x = 11$  and  $y = \frac{4}{3}$ , is 10000.

Q10

**Answer :**

$$\begin{aligned}
&(36x^2 + 25y^2 - 60xy) \\
&\Rightarrow x = \frac{2}{3}, y = \frac{1}{5} \\
&= (6x)^2 + (5y)^2 - 2(6x)(5y) \\
&= (6x - 5y)^2 \\
&= \left(6\left(\frac{2}{3}\right) - 5\left(\frac{1}{5}\right)\right)^2 \\
&= (4 - 1)^2 \\
&= (3)^2 \\
&\Rightarrow 9
\end{aligned}$$

Q10

**Answer :**

$$\begin{aligned}
&(36x^2 + 25y^2 - 60xy) \\
&\Rightarrow x = \frac{2}{3}, y = \frac{1}{5} \\
&= (6x)^2 + (5y)^2 - 2(6x)(5y) \\
&= (6x - 5y)^2 \\
&= \left(6\left(\frac{2}{3}\right) - 5\left(\frac{1}{5}\right)\right)^2 \\
&= (4 - 1)^2 \\
&= (3)^2 \\
&\Rightarrow 9
\end{aligned}$$

Q11

**Answer :**

$$\left(i\right) \left(x + \frac{1}{x}\right) = 4$$

Squaring both the sides :

$$\Rightarrow \left(x + \frac{1}{x}\right)^2 = (4)^2$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2} + 2(x)\left(\frac{1}{x}\right)\right) = 16$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right) + 2 = 16$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right) = 16 - 2$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right) = 14$$

Therefore, the value of  $x^2 + \frac{1}{x^2}$  is 14.

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