



Exercise 6C

Q1

Answer :

$$\begin{aligned} &= 4a \times 3a + 4a \times 7b \\ &= 4 \times 3 \times a^{(1+1)} + 4 \times 7 \times a \times b \\ &= 12a^2 + 28ab \end{aligned}$$

Q2

Answer :

$$\begin{aligned} &= 5a \times 6a - 5a \times 3b \\ &= 5 \times 6 \times a \times a - (5 \times 3 \times a \times b) \\ &= 30a^2 - 15ab \end{aligned}$$

Q3

Answer :

$$\begin{aligned} &= 8a^2 \times 2a + 8a^2 \times 5b \\ &= 8 \times 2 \times a^2 \times a + 8 \times 5 \times a^2 \times b \\ &= 16a^{(2+1)} + 40a^2b \\ &= 16a^3 + 40a^2b \end{aligned}$$

Q4

Answer :

$$\begin{aligned} &= 9x^2 \times 5x + 9x^2 \times 7 \\ &= 9 \times 5 \times x^2 \times x + 9 \times 7 \times x^2 \\ &= 45x^{(2+1)} + 63x^2 \\ &= 45x^3 + 63x^2 \end{aligned}$$

Q5

Answer :

$$\begin{aligned} &= ab \times a^2 - ab \times b^2 \\ &= a^{(1+2)}b - ab^{(1+2)} \\ &= a^3b - ab^3 \end{aligned}$$

Q6

Answer :

$$\begin{aligned} &= 2x^2 \times 3x - 2x^2 \times 4x^2 \\ &= 2 \times 3 \times x^2 \times x - 2 \times 4 \times x^2 \times x^2 \\ &= 6 \times x^{(2+1)} - 8 \times x^{(2+2)} \\ &= 6x^3 - 8x^4 \end{aligned}$$

Q7

Answer :

$$\begin{aligned} &= \frac{3}{5} m^2n \times m + \frac{3}{5} m^2n \times 5n \\ &= \frac{3}{5} \times m^2 \times m \times n + \frac{3}{5} \times 5 \times m^2 \times n \times n \\ &= \frac{3}{5} m^{(2+1)} \times n + 3 \times m^2 \times n^{(1+1)} \\ &= \frac{3}{5} m^3n + 3m^2n^2 \end{aligned}$$

Q8

Answer :

$$\begin{aligned}
&= -17x^2 \times 3x - (-17x^2 \times 4) \\
&= -17 \times 3 \times x^2 \times x + 17 \times 4 \times x^2 \\
&= -51 \times x^{(2+1)} + 68x^2 \\
&= -51x^3 + 68x^2
\end{aligned}$$

Q9

Answer :

$$\begin{aligned}
&= \frac{7}{2}x^2 \times \frac{4}{7} \times x + \frac{7}{2}x^2 \times 2 \\
&= \frac{7}{2} \times \frac{4}{7} \times x^2 \times x + \frac{7}{2} \times 2 \times x^2 \\
&= 2 \times x^{(2+1)} + 7x^2 \\
&= 2x^3 + 7x^2
\end{aligned}$$

Q10

Answer :

$$\begin{aligned}
&= -4x^2y \times 3x^2 - (-4x^2y \times 5y) \\
&= -4 \times 3 \times x^2 \times x^2 \times y + 4 \times 5 \times x^2 \times y \times y \\
&= -12 \times x^{(2+2)} \times y + 20 \times x^2 \times y^{(1+1)} \\
&= -12x^4y + 20x^2y^2
\end{aligned}$$

Q11

Answer :

$$\begin{aligned}
&= \frac{-4}{27}xyz \times \frac{9}{2}x^2yz - \left(\frac{-4}{27}xyz \times \frac{3}{4}xyz^2 \right) \\
&= \frac{-4}{27} \times \frac{9}{2} \times x \times x^2 \times y \times y \times z \times z + \frac{4}{27} \times \frac{3}{4} \times x \times x \times y \times y \times z \times z^2 \\
&= \frac{-2}{3} \times x^{(1+2)} \times y^{(1+1)} \times z^{(1+1)} + \frac{1}{9} \times x^{(1+1)} \times y^{(1+1)} \times z^{(1+2)}
\end{aligned}$$

$$= \frac{-2}{3} x^3 y^2 z^2 + \frac{1}{9} x^2 y^2 z^3$$

Q12

Answer :

$$\begin{aligned} &= 9t^2 \times t + 9t^2 \times 7t^3 \\ &= 9 \times t^2 \times t + 9 \times 7 \times t^2 \times t^3 \\ &= 9 \times t^{(2+1)} + 63 \times t^{(2+3)} \\ &= 9t^3 + 63t^5 \end{aligned}$$

Q13

Answer :

$$\begin{aligned} &= 10a^2 \times 0.1a - 10a^2 \times 0.5b \\ &= 10 \times 0.1 \times a^2 \times a - 10 \times 0.5 \times a^2 \times b \\ &= 1 \times a^{(2+1)} - 5a^2b \\ &= a^3 - 5a^2b \end{aligned}$$

Q14

Answer :

$$\begin{aligned} &= 1.5a \times 10a^2b - 1.5a \times 100ab^2 \\ &= 1.5 \times 10 \times a \times a^2b - 1.5 \times 100 \times a \times a \times b^2 \\ &= 15 \times a^{(1+2)}b - 150 \times a^{(1+1)} \times b^2 \\ &= 15a^3b - 150a^2b^2 \end{aligned}$$

Q15

Answer :

$$\begin{aligned} &= \frac{2}{3} abc \times a^2 + \frac{2}{3} abc \times b^2 - \frac{2}{3} abc \times 3c^2 \\ &= \frac{2}{3} a \times a^2 \times b \times c + \frac{2}{3} a \times b \times b^2 \times c - \frac{2}{3} \times 3 \times a \times b \times c \times c^2 \\ &= \frac{2}{3} \times a^{(1+2)} \times b \times c + \frac{2}{3} \times a \times b^{(1+2)} \times c - 2 \times a \times b \times c^{(1+2)} \\ &= \frac{2}{3} a^3bc + \frac{2}{3} ab^3c - 2abc^3 \end{aligned}$$

Q16

Answer :

$$\begin{aligned} &24x^2(1-2x) \\ &= 24x^2 \times 1 - 24x^2 \times 2x \\ &= 24x^2 - 24 \times 2 \times x^2 \times x \\ &= 24x^2 - 48x^3 \end{aligned}$$

When $x = 2$:

$$\text{L.H.S.} = 24x^2(1-2x) = 24 \times 2^2(1-2 \times 2) = 96(1-4) = 96 \times (-3) = -288$$

$$\text{R.H.S.} = 24x^2 - 48x^3 = 24 \times 2^2 - 48 \times 2^3 = 96 - 384 = -288$$

$$\text{L.H.S.} = \text{R.H.S.}$$

$$\therefore 24x^2(1-2x) = 24x^2 - 48x^3$$

Q17

Answer :

$$\begin{aligned} &ab\left(a^2 + b^2\right) \\ &= ab \times a^2 + ab \times b^2 \\ &= a \times a^2 \times b + a \times b \times b^2 \\ &= a^{(1+2)} \times b + a \times b^{(1+2)} \\ &= a^3b + ab^3 \end{aligned}$$

When $a = 2$ and $b = \frac{1}{2}$, we get :

$$\text{L.H.S.} = ab\left(a^2 + b^2\right) = 2 \times \frac{1}{2} \left(2^2 + \frac{1}{2^2}\right) = 4 + \frac{1}{4} = \frac{17}{4}$$

***** END *****

