Exercise 6C

Q1

Answer :

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

Q2

Answer :

$$= 5a \times 6a - 5a \times 3b$$
$$= 5 \times 6 \times a \times a - (5 \times 3 \times a \times b)$$
$$= 30a^2 - 15ab$$

Q3

Answer :

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

Q4

Answer :

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

Q5

Answer :

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

Q6

Answer :

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

Q7

Answer :

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

Q8

Answer :

$$= -17x^2 \times 3x - \left(-17x^2 \times 4\right)$$
$$= -17 \times 3 \times x^2 \times x + 17 \times 4 \times x^2$$
$$= -51 \times x^{(2+1)} + 68x^2$$
$$= -51x^3 + 68x^2$$

Q9

Answer :

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

Q10

Answer :

$$= -4x^2y \times 3x^2 - \left(-4x^2y \times 5y\right)$$
$$= -4 \times 3 \times x^2 \times x^2 \times y + 4 \times 5 \times x^2 \times y \times y$$
$$= -12 \times x^{(2+2)} \times y + 20 \times x^2 \times y^{(1+1)}$$
$$= -12x^4y + 20x^2y^2$$

Q11

Answer :

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

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

Q12

Answer :

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

Q13

Answer :

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

Q14

Answer :

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

Q15

Answer :

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

Q16

Answer :

$24x^2(1-2x)$
$= 24x^2 \times 1 - 24x^2 \times 2x$
$= 24x^2 - 24 \times 2 \times x^2 \times x$
$= 24x^2 - 48x^3$
When $x = 2$:
$\text{L.H.S.} = 24x^2(1-2x) = 24 \times 2^2(1-2 \times 2) = 96(1-4) = 96 \times (-3) = -288$
$\text{R.H.S.} = 24x^2 - 48x^2 = 24 \times 2^2 - 48 \times 2^3 = 96 - 384 = -288$
$\text{L.H.S.} = \text{R.H.S.}$
$\therefore 24x^2(1-2x) = 24x^2 - 48x^3$

Q17

Answer :

$ab(^2 + b^2)$
$= ab \times a^2 + ab \times b^2$
$= a \times a^2 \times b + a \times b \times b^2$
$= a^{(1+2)} \times b + a \times b^{(1+2)}$
$= a^3b + ab^3$
When $a = 2$ and $b = \frac{1}{2}$, we get :
$\text{L.H.S.} = ab(a^2 + b^2) = 2 \times \frac{1}{2}\left(2^2 + \frac{1}{2^3}\right) = 4 + \frac{1}{4} = \frac{17}{4}$

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