Exercise 6C

$\text{R.H.S.} = a^3b + ab^3 = 2^3 \times \frac{1}{2} + 2 \times \left(\frac{1}{2}\right)^3 = 4 + \frac{1}{4} = \frac{17}{4}$

$\therefore$ L.H.S. = R.H.S.

Q18

**Answer :**

$s\,(s^2 - st)$

$= s \times s^2 - s \times st$

$= s^{(1+2)} - s^{(1+1)} \times t$

$= s^3 - s^2t$

When $s = 2$ and $t = 3$, we get :

$\text{L.H.S.} = s\left(s^2 - st\right) = 2\left(2^2 - 2 \times 3\right) = 2 \times \left(4 - 6\right) = -4$

$\text{R.H.S.} = s^3 - s^2t = 2^3 - 2^2 \times 3 = 8 - 12 = -4$

L.H.S. = R.H.S.

$\therefore s\left(s^2 - st\right) = s^3 - s^2t$

Q19

**Answer :**

$-3y\left(xy + y^2\right)$

$= -3y \times xy - 3y \times y^2$

$= -3 \times x \times y \times y - 3 \times y \times y^2$

$= -3 \times x \times y^{(1+1)} - 3 \times y^{(1+2)}$

$= -3xy^2 - 3y^3$

When $x = 4$ and $y = 5$, we get :

$\text{L.H.S.} = -3y\left(xy + y^2\right) = -3 \times 5\left(4 \times 5 + 5^2\right) = -15 \times \left(20 + 25\right) = -675$

$\text{R.H.S.} = -3xy^2 - 3y^3 = -3 \times 4 \times 5^2 - 3 \times 5^3 = -300 - 375 = -675$

L.H.S. = R.H.S.

$$\therefore\ -3y\left(xy\ +y^2\right)\ =\ \ -3xy^2\ \ -3y^3$$

Q20

**Answer :**

$$\begin{aligned}
&a(b-c)+b(c-a)+c(a-b)\\
&=a\times b\ -a\times c\ +b\times c\ -b\times a\ +c\times a\ -c\times b\\
&=ab\ -ac\ +bc\ -ab\ +ac\ -bc\\
&=0
\end{aligned}$$

Q21

**Answer :**

$$\begin{aligned}
&a(b-c)-b\,(c-a)-c(a-b)\\
&=a\times b\ -a\times c\ -b\times c+b\times a\ -c\times a\ +c\times b\\
&=ab\ +ab\ -ac\ -\ ac\ -bc\ +bc\\
&=2ab\ -\ 2ac\\
&=2a(b-c)
\end{aligned}$$

Q22

**Answer :**

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

Q23

**Answer :**

$$
\begin{aligned}
&x\left(x+4\right)\ +3x\left(2x^2-1\right)\ +4x^2+4\\
&=x\times x\ +x\times 4\ +3x\times 2x^2\ -3x\ +4x^2\ +4\\
&=x^{(1+1)}\ +4x\ +6\times x^{(1+2)}-3x\ +4x^2+4\\
&=x^2\ +4x\ +6x^3-3x\ +4x^2\ +4\\
&=6x^3+5x^2\ +x\ +4
\end{aligned}
$$

Q24

**Answer :**

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

Q25

**Answer :**

$$
\begin{aligned}
&a^2b\left(a-b^2\right)+ab^2\left(4ab-2a^2\right)\ -a^3b\left(1-2b\right)\\
&=a^2b\times a\ -a^2b\times b^2\ +ab^2\times 4ab\ -ab^2\times 2a^2-a^3b\ +a^3b\times 2b\\
&=a^{(2+1)}\times b\ -\ a^2\times b^{(1+2)}\ +4\times a^{(1+1)}\times b^{(2+1)}\ -2\times a^{(1+2)}\times b^2-a^3b\ +2\times a^3\\
&\times b^{(1+1)}\\
&=\ a^3b\ -a^2b^3\ +4a^2b^3-2a^3b^2-a^3b\ +2a^3b^2\\
&=3a^2b^3
\end{aligned}
$$

Q26

**Answer :**

$$
\begin{aligned}
&4st\left(s-t\right)-6s^2\left(t-t^2\right)-3t^2\left(2s^2-s\right)+2st\left(s-t\right)\\
&=4st\times s\ -4st\times t\ -6s^2\times t-6s^2\times\left(-t^2\right)\ -3t^2\times 2s^2-3t^2\times\left(-s\right)\ +2st\times s\ -2st\\
&\times t\\
&=4\times s^{(1+1)}\times t\ -4\times s\times t^{(1+1)}\ -6s^2t\ +6s^2t^2\ -6t^2s^2+3t^2s\ +2\times s^{(1+1)}\times t\ -2\times s\\
&\times t^{(1+1)}\\
&=4s^2t\ -4st^2-6s^2t\ +6s^2t^2-6t^2s^2+3t^2s+2s^2t\ -2st^2\\
&=4s^2t\ -6s^2t+2s^2t\ -4st^2\ +3st^2-2st^2\\
&=-3st^2
\end{aligned}
$$

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