Exercise 6C

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

∴ L.H.S. = R.H.S.

Q18

Answer:

$s\left(s^2 - st\right)$

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

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

$= s^3 - s^2t$

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

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

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

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

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

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:

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

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 :

$$a(b - c) + b(c - a) + c(a - b)$$
$$= a \times b - a \times c + b \times c - b \times a + c \times a - c \times b$$
$$= ab - ac + bc - ab + ac - bc$$
$$= 0$$

Q21

Answer :

$$a(b - c) - b(c - a) - c(a - b)$$
$$= a \times b - a \times c - b \times c + b \times a - c \times a + c \times b$$
$$= ab + ab - ac - ac - bc + bc$$
$$= 2ab - 2ac$$
$$= 2a(b - c)$$

Q22

Answer :

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

Q23

Answer :

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

Q24

Answer:

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

Q25

Answer:

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

Q26

Answer:

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

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