Exercise 7A

Q13

Answer :

We have:

$$16(2p-3q)^2-4(2p-3q)=(2p-3q)\{16(2p-3q)-4\}$$
$$=(2p-3q)(32p-48q-4)$$

$$\therefore 16(2p-3q)^2-4(2p-3q)=(2p-3q)(32p-48q-4)$$

Q14

Answer :

We have:

$$x(a-3)+y(3-a)=x(a-3)-y(a-3)$$
$$=(a-3)(x-y)$$

$$\therefore x(a-3)+y(3-a)=(a-3)(x-y)$$

Q15

Answer :

We have:

$$12(2x-3y)^2-16(3y-2x)=12(2x-3y)^2+16(2x-3y)$$
$$=(2x-3y)\{12(2x-3y)+16\}$$
$$=(2x-3y)(24x-36y+16)$$

$$\therefore\ 12(2x-3y)^2-16(3y-2x)=(2x-3y)(24x-36y+16)$$

Q16

Answer :

We have:

$$\begin{aligned}(x+y)(2x+5)-(x+y)(x+3) &= (x+y)\{(2x+5)-(x+3)\} \\ &= (x+y)(2x+5-x-3) \\ &= (x+y)(x+2)\end{aligned}$$

Q17

Answer :

By grouping the terms:

$$\begin{aligned}ar+br+at+bt &= (ar+br)+(at+bt) \\ &= r(a+b)+t(a+b) \\ &= (a+b)(r+t)\end{aligned}$$

$$\therefore ar+br+at+bt = (a+b)(r+t)$$

Q18

Answer :

By suitably arranging the terms:

$$\begin{aligned}x^2-ax-bx+ab &= x^2-bx-ax+ab \\ &= \left(x^2-bx\right)-(ax-ab) \\ &= x(x-b)-a(x-b) \\ &= (x-b)(x-a)\end{aligned}$$

$$\therefore x^2-ax-bx+ab = (x-b)(x-a)$$

Q19

Answer :

By suitably arranging the terms:

$$\begin{aligned} ab^2 - bc^2 - ab + c^2 &= ab^2 - ab - bc^2 + c^2 \\ &= \left(ab^2 - ab\right) - \left(bc^2 - c^2\right) \\ &= ab(b-1) - c^2(b-1) \\ &= (b-1)\left(ab - c^2\right) \end{aligned}$$

$$\therefore ab^2 - bc^2 - ab + c^2 = (b-1)\left(ab - c^2\right)$$

Q20

Answer :

By suitably arranging the terms:

$$\begin{aligned} x^2 - xz + xy - yz &= x^2 + xy - xz - yz \\ &= \left(x^2 + xy\right) - (xz + yz) \\ &= x(x+y) - z(x+y) \\ &= (x+y)(x-z) \end{aligned}$$

$$\therefore x^2 - xz + xy - yz = (x+y)(x-z)$$

Q21

Answer :

By suitably arranging the terms:

$$\begin{aligned} 6ab - b^2 + 12ac - 2bc &= 6ab + 12ac - b^2 - 2bc \\ &= (6ab + 12ac) - \left(b^2 + 2bc\right) \\ &= 6a(b+2c) - b(b+2c) \\ &= (b+2c)(6a-b) \end{aligned}$$

$$\therefore 6ab - b^2 + 12ac - 2bc = (b + 2c)(6a - b)$$

Q22

Answer :

We have:

$$\begin{aligned}(x-2y)^2 + 4x - 8y &= (x-2y)^2 + 4(x-2y) \\ &= (x-2y)(x-2y) + 4(x-2y) \\ &= (x-2y)\{(x-2y)+4\} \\ &= (x-2y)(x-2y+4)\end{aligned}$$

$$\therefore (x-2y)^2 + 4x - 8y = (x-2y)(x-2y+4)$$

Q23

Answer :

We have:

$$\begin{aligned}y^2 - xy(1-x) - x^3 &= y^2 - xy + x^2y - x^3 \\ &= (y^2 - xy) + (x^2y - x^3) \\ &= y(y-x) + x^2(y-x) \\ &= (y-x)(y+x^2)\end{aligned}$$

$$\therefore y^2 - xy(1-x) - x^3 = (y-x)(y+x^2)$$

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