Exercise 7B

$\therefore 63a^2b^2 - 7 = 7(3ab+1)(3ab-1)$

Q16

Answer :

We have:

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

$\therefore 1-(b-c)^2 = (1+b-c)(1-b+c)$

Q17

Answer :

We have:

$$\begin{aligned} (2a+3b)^2-16c^2 &= (2a+3b)^2-(4c)^2 \\ &= \{(2a+3b)+4c\}\{(2a+3b)-4c\} \\ &= (2a+3b+4c)(2a+3b-4c) \end{aligned}$$

$\therefore (2a+3b)^2-16c^2 = (2a+3b+4c)(2a+3b-4c)$

Q18

Answer :

We have:

$$\begin{aligned} (l+m)^2-(l-m)^2 &= \{(l+m)+(l-m)\}\{(l+m)-(l-m)\} \\ &= (l+m+l-m)(l+m-l+m) \\ &= (2l)(2m) \end{aligned}$$

$\therefore (l+m)^2-(l-m)^2 = (2l)(2m)$

Q19

Answer :

We have:

$$\begin{aligned}(2x+5y)^2-1 &= (2x+5y)^2-(1)^2\\ &= \{(2x+5y)+1\}\{(2x+5y)-1\}\\ &= (2x+5y+1)(2x+5y-1)\end{aligned}$$

$$\therefore (2x+5y)^2-1 = (2x+5y+1)(2x+5y-1)$$

Q20

Answer :

We have:

$$\begin{aligned}36c^2-(5a+b)^2 &= (6c)^2-(5a+b)^2\\ &= \{(6c)+(5a+b)\}\{(6c)-(5a+b)\}\\ &= (6c+5a+b)(6c-5a-b)\end{aligned}$$

$$\therefore 36c^2-(5a+b)^2 = (6c+5a+b)(6c-5a-b)$$

Q21

Answer :

We have:

$$\begin{aligned}(3x-4y)^2-25z^2 &= (3x-4y)^2-(5z)^2\\ &= \{(3x-4y)+5z\}\{(3x-4y)-5z\}\\ &= (3x-4y+5z)(3x-4y-5z)\end{aligned}$$

$$\therefore (3x-4y)^2-25z^2 = (3x-4y+5z)(3x-4y-5z)$$

Q22

Answer :

We have:

$$x^2 - y^2 - 2y - 1 = x^2 - \left(y^2 + 2y + 1\right)$$

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

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

Q23

Answer :

We have:

$$25 - a^2 - b^2 - 2ab = 25 - \left(a^2 + b^2 + 2ab\right)$$

$$= 25 - (a+b)^2$$
$$= (5)^2 - (a+b)^2$$
$$= \{5 + (a+b)\}\{5 - (a+b)\}$$
$$= (5 + a + b)(5 - a - b)$$

$$\therefore 25 - a^2 - b^2 - 2ab = (5 + a + b)(5 - a - b)$$

Q24

Answer :

We have:

$$\begin{aligned}25a^2-4b^2+28bc-49c^2 &= 25a^2-\left(4b^2-28bc+49c^2\right)\\ &= (5a)^2-(2b-7c)^2\\ &= \{5a+(2b-7c)\}\{5a-(2b-7c)\}\\ &= (5a+2b-7c)(5a-2b+7c)\end{aligned}$$

$$\therefore 25a^2-4b^2+28bc-49c^2=(5a+2b-7c)(5a-2b+7c)$$

Q25

Answer :

We have:

$$\begin{aligned}9a^2-b^2+4b-4 &= 9a^2-\left(b^2-4b+4\right)\\ &= (3a)^2-(b-2)^2\\ &= \{3a+(b-2)\}\{3a-(b-2)\}\\ &= (3a+b-2)(3a-b+2)\end{aligned}$$

$$\therefore 9a^2-b^2+4b-4=(3a+b-2)(3a-b+2)$$

Q26

Answer :

We have:

$$\begin{aligned}100-(x-5)^2 &= (10)^2-(x-5)^2\\ &= \{10+(x-5)\}\{10-(x-5)\}\\ &= (10+x-5)(10-x+5)\\ &= (5+x)(15-x)\end{aligned}$$

Q27

Answer :

We have:

$$\left\{(405)^2-(395)^2\right\}=(405+395)(405-395)$$
$$=(800\times 10)$$
$$=8000$$

$$\therefore \left\{(405)^2-(395)^2\right\}=8000$$

Q28

Answer :

We have:

$$\left\{(7.8)^2-(2.2)^2\right\}=(7.8+2.2)(7.8-2.2)$$
$$=(10\times 5.6)$$
$$=56$$

$$\therefore \left\{(7.8)^2-(2.2)^2\right\}=56$$

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