Exercise 8C

Q8

Answer :

$A = 7x^2 + 5xy - 9y^2$
$B = -4x^2 + xy + 5y^2$
$C = 4y^2 - 3x^2 - 6xy$

Substituting the values of A, B and C in A+B+C:
$= (7x^2 + 5xy - 9y^2)+(-4x^2 + xy + 5y^2)+(4y^2 - 3x^2 - 6xy)$
$= 7x^2 + 5xy - 9y^2-4x^2 + xy + 5y^2+4y^2 - 3x^2 - 6xy$

Rearranging and collecting the like terms:
$(7-4-3)x^2 + (5+1-6)xy +(-9+5+4)y^2$
$= (0)x^2 + (0)xy + (0)y^2$
$= 0$
$\Rightarrow \mathbf{A + B + C = 0}$

Q9

Answer :

Let the expression to be added be X.
$(5x^3 - 2x^2 + 6x + 7)+X = (x^3 + 3x^2 - x + 1)$
$X = (x^3 + 3x^2 - x + 1) - (5x^3 - 2x^2 + 6x + 7)$

Changing the sign of each term of the expression that is to be subtracted and then adding:
$X = (x^3 + 3x^2 - x + 1) + (-5x^3 + 2x^2 - 6x - 7)$
$X = x^3 + 3x^2 - x + 1-5x^3 + 2x^2 - 6x - 7$

Rearranging and collecting the like terms:
$X = (1-5)x^3 + (3+2)x^2 +(-1-6)x + 1-7$
$X = -4x^3 + 5x^2 - 7x -6$

So, $-4x^3 + 5x^2 - 7x -6$ must be added to $5x^3 - 2x^2 + 6x + 7$ to get the sum as $x^3 + 3x^2 - x + 1$.

Q10

Answer :

$P = a^2 - b^2 + 2ab$

$Q = a^2 + 4b^2 - 6ab$

$R = b^2 + 6$

$S = a^2 - 4ab$

$T = -2a^2 + b^2 - ab + a$

Adding P, Q, R and S:

$P+Q+R+S$

$= (a^2 - b^2 + 2ab)+(a^2 + 4b^2 - 6ab)+(b^2 + 6)+(a^2 - 4ab)$

$= a^2 - b^2 + 2ab+a^2 + 4b^2 - 6ab+b^2 + 6+a^2 - 4ab$

Rearranging and collecting the like terms:

$= (1+1+1)a^2 +(-1+4+1) b^2 + (2-6-4)ab+6$

$P+Q+R+S = 3a^2 +4b^2 - 8ab+6$

To find P + Q + R + S − T, subtract $T = (-2a^2 + b^2 - ab + a)$ from $P+Q+R+S = (3a^2 +4b^2 - 8ab+6)$.

On changing the sign of each term of the expression that is to be subtracted and then adding:
Term to be subtracted = $-2a^2 + b^2 - ab + a$
Changing the sign of each term of the expression gives $2a^2 - b^2 + ab - a$.
Now add:
$(3a^2 +4b^2 - 8ab+6)+(2a^2 - b^2 + ab - a) = 3a^2 +4b^2 - 8ab+6+2a^2 - b^2 + ab - a$
$= (3+2)a^2 +(4-1) b^2 +(-8+1) ab - a+6$

$P + Q + R + S - T = 5a^2 +3b^2 -7 ab - a+6$

Q11

Answer :

Let the expression to be subtracted be X.
$(a^3 - 4a^2 + 5a - 6)-X = (a^2 - 2a + 1)$
$X = (a^3 - 4a^2 + 5a - 6)- (a^2 - 2a + 1)$
Since '-' sign precedes the parenthesis, we remove it and change the sign of each term within the parenthesis.
$X = a^3 - 4a^2 + 5a - 6- a^2 + 2a - 1$
Rearranging and collecting the like terms:
$X = a^3 +(- 4-1)a^2 + (5+2)a - 6 - 1$
$X = a^3 -5a^2 + 7a - 7$
So, $a^3 -5a^2 + 7a - 7$ must be subtracted from $a^3 - 4a^2 + 5a - 6$ to obtain $a^2 - 2a + 1$.

Q12

Answer :

To calculate how much is a + 2b − 3c greater than 2a − 3b + c, we have to subtract 2a − 3b + c from a + 2b − 3c.

Change the sign of each term of the expression that is to be subtracted and then add.

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