Exercise 19 B

4) Find the sum

i) $3a+4b+7c, -5a+3b-6c, 4a-2b-4c$

Ans:- $=(3a+4b+7c)+(-5a+3b-6c)+(4a-2b-4c)$

$= 3a+4b+7c-5a+3b-6c+4a-2b-4c$

$= 3a-5a+4a+4b+3b-2b+7c-6c-4c$

$= 2a+5b-3c$

ii) $2x^2+xy-y^2, -x^2+2xy+3y^2, 3x^2-10xy+4y^2$

Ans:- $=(2x^2+xy-y^2)+(-x^2+2xy+3y^2)+(3x^2-10xy+4y^2)$

$= 2x^2+xy-y^2-x^2+2xy+3y^2+3x^2-10xy+4y^2$

$= 2x^2-x^2+3x^2+xy+2xy-10xy-y^2+3y^2+4y^2$

$= 4x^2-7xy+8y^2$

iii) $x^2-x+1, -5x^2+2x-2, 3x^2-3x+1$

Ans:- $=(x^2-x+1)+(-5x^2+2x-2)+(3x^2-3x+1)$

$= x^2-x+1-5x^2+2x-2+3x^2-3x+1$

$= x^2-5x^2+3x^2-x+2x-3x+1-2+1$

$= -x^2-2x+0$

iv) $a^2-ab+bc$

$-2a^2+2ab+bc$

$3a^2+ab-3bc$

$2a^2+2ab-bc$

v) $4x^2 - 3x + 7$
$-x^2 + 4x + 8$
$+ \quad 2x^2 + 5x - 10$
$x^2 + -6x + 5$

vi) $3x \quad 4xy \quad -y^2$
$-4x \quad +2xy \quad +2y^2$
$6x \quad -xy \quad +3y^2$
$5x + 4xy + 4y^2$

2. Add the following expression

(i) $(-17x^2 - 2xy + 23y^2) + (-9y^2 + 15x^2 + 7xy) + (13x^2 + 3y^2 - 4xy)$

$= (-17x^2 - 2xy + 23y^2) + (-9y^2 + 15x^2 + 7xy) + (13x^2 + 3y^2 - 4xy)$
$= -17x^2 - 2xy + 23y^2 - 9y^2 + 15x^2 + 7xy + 13x^2 + 3y^2 - 4xy$
$= -17x^2 + 15x^2 + 13x^2 + 23y^2 - 9y^2 + 3y^2 - 2xy + 7xy - 4xy$
$= 11x^2 + 15y^2 + xy$

ii) $-x^3 \quad -3xy \quad +3y^2 \quad +8$
$-3x^2 \quad +4xy \quad -5y^2 \quad -3$
$+ \quad -2x^2 \quad -6xy \quad +y^2 \quad -2$
$-6x^2 + 5xy - 1y^2 + 3$

iii) $a^3 - 2b^3 \quad + a$
$2a^3 - 2b^3 + b$
$+ \quad 4a^3 + 2b^3 \quad -2b \quad -5a$
$3a^3 + 2b^3 - 3b - 6a$

3. Evaluate:

i) $3a - (a + 2b)$

Ans = $3a - a - 2b$
$= 2a - 2b$

ii) $(5x-3y)-(x+y)$

Ans = $5x-3y-x-y$

= $5x-x-3y-y$

= $4x-4y$

iii) $(8a+15b)-(3b-7a)$

Ans = $8a+15b-3b+7a$

= $8a+7a+15b-3b$

= $15a-12b$

iv) $(8x+7y)-(4y-3x)$

Ans = $8x+7y-4y+3x$

= $8x+3x+7y-4y$

= $11x+3y$

v) $7-(4a-5)$

Ans = $7-4a+5$

= $7+5-4a$

= $12-4a$

vi) $(6y-13)-(4-7y)$

Ans = $6y-13-4+7y$

= $6y+7y-13-4$

= $13y-17$

4. Subtract

i) $5a-3b+2c$ from $a-4b-2c$

Ans = $a-4b-2c-(5a-3b+2c)$

= $a-4b-2c-5a+3b-2c$

= $a-5a-4b+3b-2c-2c$

= $-4a-b+4c$

ii) $4x-6y+3z$ from $12x+7y-21z$

Ans $= 12x+7y-21z-(4x-6y+3z)$
$= 12x+7y-21z-4x+6y-3z$
$= 12x-4x-7y+6y-21z-3z$
$= 8x-1y-24z$

iii) $5-a-4b+4c$ from $5a-7b+2c$

Ans $= 5a-7b+2c-(5-a-4b+4c)$
$= 5a-7b+2c-5+a+4b-4c$
$= 5a-a-7b+4b+2c-4c-5$
$= 4a-3b-2c-5$

iv) $-8x-12y+17z$ from $x-y-z$

Ans $= x-y-z-(-8x-12y+17z)$
$= x-y-z+8x+12y-17z$
$= x+8x-y+12y-z-17z$
$= 9x+11y-18z$

v) $2ab+cd-ac-2bd$ from $ab-2cd+2ac+bd$.

Ans $= ab-2cd+2ac+bd-(2ab+cd-ac-2bd)$
$= ab-2cd+2ac+bd-2ab-cd+ac+2bd$
$= ab-2ab-2cd-cd+2ac+ac+bd+2bd$
$= -ab-3cd+3ac+3bd$

5) Take $-ab+bc-ca$ from $bc-ca+ab$

Ans: $-bc-ca+ab-(-ab+bc-ca)$
$= bc-ca+ab+ab-bc+ca$
$= +ab+ab+bc-bc-ca+ca$
$= 2ab$

ii) Take $5x+6y-3z$ from $3x+5y-4z$

Ans: $= 3x+5y-4z-(5x+6y-3z)$
$= 3x+5y-4z-5x+6y-3z$

$= 3x - 5x + 5y - 6y - 4z + 3z$

$= -2x - y - z$

iii) Take $-\frac{3}{2}p + q - r$ from $\frac{1}{2}p - \frac{1}{3}q - \frac{3}{2}r$

Ans $= \frac{1}{2}p - \frac{1}{3}q - \frac{3}{2}r - (-\frac{3}{2}p + q - r)$

$= \frac{1}{2}p - \frac{1}{3}q - \frac{3}{2}r + \frac{3}{2}p - q + r$

$= \frac{1}{2}p + \frac{3}{2}p - \frac{1}{3}q - q - \frac{3}{2}r + r$

$= \frac{4}{2}p - \frac{4}{3}q - \frac{1}{2}r$

iv) Take $1 - a + a^2$ from $a^2 + a + 1$

Ans $= a^2 + a + 1 - (1 - a + a^2)$

$= a^2 + a + 1 - 1 + a - a^2$

$= a^2 - a^2 + a + a + 1 - 1$

$= 0 + 2a + 0$

$= 2a$

6. From the sum of $x + y - 2z$ and $2x - y + z$ subtract $x + y + z$

Ans $= x + y - 2z$

$+ 2x - y + z$

$3x - z$

$(3x - z) - (x + y + z)$

$= 3x - z - x - y - z$

$= 3x - x - y - z - z$

$= 2x - y - 2z$

7) From the sum of $3a-2b+4c$ and $3b-2c$ subtract $a-b-c$

Ans= $3a-2b+4c+(3b-2c)$
$= 3a-2b+4c+3b-2c$
$= 3a-2b+3b+4c-2c$
$= 3a+5b+2c$

$= 3a+5b+2c-(a-b-c)$
$= 3a+5b+2c-a+b+c$
$= 3a-a+5b+b+2c+c$
$= 2a+6b+3c$

8) Subtract $x-2y-z$ from the sum of $3x-y+z$ and $x+y-3z$

Ans:- $\{(3x-y+z)+(x+y-3z)\}-(x-2y-z)$
$= \{3x-y+z+x+y-3z\}-(x-2y-z)$
$= \{3x+x-y+y+z-3z\}-(x-2y-z)$
$= (4x-2z)-(x-2y-z)$
$= 4x-2z-x+2y+z$
$= 4x-x-2z+z+2y$
$= 3x+2y-z$

9) Subtract the sum of $x+y$ and $x-z$ from the sum of $x-2z$ and $x+y+z$

Ans:- $\{(x-2z)+(x+y+z)\}-\{(x+y)+(x-z)\}$
$= (x-2z+x+y+z)-(x+y+x-z)$
$= (2x+y-z)-(2x+y-z)$
$= 2x+y-z-2x-y+z$
$= 0$