Ch 2 नमूना 2

Exercise-1a (B)

1) Find the sum of:

i) A) $(3a-5a+4a)+(4b+3b-2b)+(7c-8c-4c)$

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

$2a+5b-3c$

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

$= 2a+5b-3c$

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

$= (2x^2-1x^2+3x^2)+(1xy+2xy-10xy)$
$+(-1y^2+3y^2+4y^2$

$= 4x^2-7xy-6y^2$

iii) As $(x^2-x+1)+(-5x^2+2x-2)+(3x^2-3x+1)$

~~$= x^2-x+1$~~
$= x^2-x+1-5x^2+2x-2+3x^2-3x+1$
$= (1x^2-5x^2+3x^2)+(-x+2x-3x)+(1-2+1)$
$= -1x^2-2x+0$

iv) As $(a^2-ab+bc)+(2ab+bc-2a^2)+(-3bc+3a^2+ab)$

$\Rightarrow a^2-ab+bc+2ab+bc-2a^2-3bc+3a^2+ab$
$\Rightarrow (a^2-2a^2+3a^2)+(ab+2ab+ab)+(bc+bc-3bc)$
$\Rightarrow 2a^2+4ab-bc$
$\Rightarrow 2a^2+4ab-bc$

v) $(4x^2+7-3x)+(4x-x^2+8)+(-10+5x-2x^2)$
As $4x^2+7-3x+4x-x^2+8-10+5x-2x^2$

$\Rightarrow (4x^2-x^2-2x^2)+(7+8-10)+(-3x+4x+5x)$

$\Rightarrow 1x^2+5+6x$

vi) $(3x + 4xy - y^2) + (xy - 4x + 2y^2) + (3y^2 - xy + 6x)$

Ans $3x + 4xy - y^2 + xy - 4x + 2y^2 + 3y^2 - xy + 6x$

$\Rightarrow (3x - 4x + 6x) + (4xy + xy - xy) + (-y^2 + 2y^2 + 3y^2)$

$\Rightarrow (5x) + (4xy) + (4y^2)$

(2) Add the following expressions:

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

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

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

$\Rightarrow (11x^2) + (1xy) + (17y^2)$

ii) Ans $(-x^2 - 3xy + 3y^2 + 8) + (3x^2 - 5y^2 - 3 + 4xy) + (-6xy + 2x^2 - 2 + y^2)$

$\Rightarrow -x^2 - 3xy + 3y^2 + 8 + 3x^2 - 5y^2 - 3 + 4xy - 6xy + 2x^2 - 2 + y^2$

$\Rightarrow (-x^2 + 3x^2 + 2x^2) + (-3xy + 4xy - 6xy)$

$= 4x^2 - 5xy^2 - y^2 + 3$

iii) $(a^3 - 2b^3 + a) + (b^3 - 2a^3 + b) + (-2b + 2b^3 - 5a + 4a^3)$

A) $= a^3 - 2b^3 + a + b^3 - 2a^3 + b - 2b + 2b^3 - 5a + 4a^3$

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

$= 3a^3 + b^3 - 4a - b$

(3) (a) Evaluate:

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

A) $3a - a - 2b$

$= 2a - 2b$

$= 2(a - b)$

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

A) $5x - 3y - x - y$

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

$= 4x - 4y$

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

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

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

$=15a+12b$

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

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

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

$=11x+3y$

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

As $7-4a+5$

$=7+5-4a$

$=12-4a$

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

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

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

$=13y-17$

4) Subtract:

(4) Subtract:

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

A) $\Rightarrow a-4b-2c-5a+3b-2c$

$\Rightarrow a-5a-4b+3b-2c-2c$

$\Rightarrow -4a-1b-4c$

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

A) $\Rightarrow 12x+7y-21z-4x+6y-3z$

$\Rightarrow 12x-4x+7y+6y-21z-3z$

$\Rightarrow 8x+13y-24z$

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

A) $5a-7b+2c-5+a+4b-4c$

$\Rightarrow 5a+a-7b+4b+2c-4c-5$

$\Rightarrow 6a-3b-2c-5$

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

A) $\Rightarrow x-y-z+8x+12y-17z$

$\Rightarrow x+8x-y+12y-z-17z$

$\Rightarrow 9x+11y-18z$

v) $(ab-2cd+2ac+bd)-(2ab+cd-ac-2bd)$

A) $\Rightarrow ab-2cd+2ac+bd-2ab-cd+ac+2bd$

$\Rightarrow ab-2ab-2cd-cd+2ac+ac+bd+2bd$

$\Rightarrow -ab-3cd+3ac+3bd$

(5) i) As $(bc - ca + ab) - (-ab + bc - ca)$

$\Rightarrow bc - ca + ab + ab - bc + ca$

$\Rightarrow \cancel{bc} - \cancel{bc} - \cancel{ca} + \cancel{ca} + ab + ab$

$\Rightarrow (2ab)$

ii) $\left(\frac{1}{2}p - \frac{1}{3}q - \frac{3}{2}r\right) - \left(-\frac{3}{2}p + q - r\right)$

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

$\left(\frac{1}{2}p + \frac{3}{2}p\right) - \frac{1}{3}q - q - \frac{3}{2}r + r$

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

$\frac{2}{1} \Rightarrow 2p + \left(-\frac{1}{3}q - q\right) + \left(-\frac{3}{2}r + r\right)$

$2p + \left(\frac{-1q - 3q}{3}\right) + \left(\frac{-3r + 2r}{2}\right)$

$2p + \left(\frac{-4q}{3}\right) + \left(\frac{-r}{2}\right)$

$\Rightarrow \left(2p - \frac{4}{3}q - \frac{r}{2}\right)$

iv) As $(a^2 + a + 1) - (1 - a + a^2)$

$\Rightarrow a^2 + a + 1 - 1 + a - a^2$

$\Rightarrow \cancel{a^2} - \cancel{a^2} + a + a + 1 - 1$

$\Rightarrow (2a)$

(6) As $x+y-2z+2x-y+z$

$\Rightarrow x+2x+y-y-2z+z$

$\Rightarrow 3x-z$

$\Rightarrow 3x-z$

$\Rightarrow 3x-z$

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

$= 3x-x-z-z-y = \boxed{2x-2z-y}$

(7) As $(3a-2b+4c)+(3b-2c)-(a-b-c)$

$\Rightarrow 3a-2b+4c+3b-2c-a+b+c$

$\Rightarrow 3a-a-2b+3b+b+4c-2c+c$

$\Rightarrow 2a+2b+3c$

~~$\Rightarrow (2a+2b+3c)-(a-b-c)$~~

~~$\Rightarrow 2a+2b+3c = a+b+c$~~

(8) As $(3x-y+z)+(x+y-3z)-(x-2y-z)$

$\Rightarrow 3x-y+z+x+y-3z-x+2y+z$

$\Rightarrow 3x+x-x-y+y+2y+z-3z+z$

$\Rightarrow 3x+2y-z$

$\Rightarrow \boxed{3x+2y-z}$

(9) A → $(x-2z)+(x+y+z)$

$\Rightarrow x-2z+x+y+z$

$\Rightarrow x+x-2z+z+y$

$\Rightarrow 2x-1z+y$

$\Rightarrow (2x-z+y)$

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

$\Rightarrow x+y+x-z$

$\Rightarrow x+x+y-z$

$\Rightarrow (2x+y-z)$

Subtraction → $(2x-z+y)-(2x+y-z)$

$\Rightarrow 2x-z+y-2x-y+z$

$\Rightarrow 2x-2x-z+z+y-y$

$\Rightarrow (0)$