Exercise - 19 (B)

1) Find the sum of :

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

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

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

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

$= 7a-5a+7b-2b+7c-10c$

$= 2a+5b-3c$

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

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

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

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

$= 5x^2 - x^2 + 3xy - 10xy + 7y^2 - y^2$

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

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

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

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

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

$= 4x^2 - 5x^2 + 2x - 4x + 2 - 2 = -x^2 - 2x$

iv) $a^2 - ab + bc$, $2ab + bc - 2a^2$ and $-3bc + 3a^2 + ab.$

$= (a^2 - ab + bc) + (2ab + bc - 2a^2) + (-3b + 3a^2 + ab)$

$= a^2 - ab + bc + 2ab + bc - 2a^2 - 3bc + 3a^2 + ab$

$= a^2 + 3a^2 - 2a^2 + 2ab + ab - ab + bc + bc - 3bc$

$= 4a^2 - 2a^2 + 3ab - ab + 2bc - 3bc$

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

v) $4x^2 + 7 - 3x$, $4x - x^2 + 8$ and $-10 + 5x - 2x^2.$

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

$= 4x^2 + 7 - 3x + 4x - 3x^2 + 8 - 10 + 5x - 2x^2$

$= 4x^2 - x^2 - 2x^2 + 7 + 8 - 10 + 4x + 5x - 3x$

$= 4x^2 - 3x^2 + 15 - 10 + 9x - 3x$

$= x^2 + 5 + 6x$

vi) $3x + 4xy - y^2$, $xy - 4x + 2y^2$ and $3y^2 - xy + 6x.$

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

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

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

$= 9x - 4x + 5xy - xy + 5y^2 - y^2$

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

Continue of 19 B

2) Add the following expressions.

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

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

$= -17x^2 + 15x^2 + 13x^2 - 2xy + 7xy - 4xy$

$= 11x^2 + xy + 17y^2.$

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

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

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

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

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

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

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

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