H.W
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Ex-19 B

Q(1) i) $3a+4b+7c, -5a+3b-6c$ and $4a-2b-4c$

The sum of $3a+4b+7c$; $-5a+3b-6c$ and $4b-2b-4c$ is calculated as shown below.

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

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

we get,

$=2a+5b-3c$

Hence, the sum of $3a+4b+7c$, $-5a+3b-6c$ and $4a-2b-4c$ is $3b$

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

The sum of $2x^2+xy-y^2$, $-x^2+2xy+3y^2$ and $3x^2-10xy+4y^2$ is calculated as shown below

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

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

we get

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

Hence, the sum of $2x^2+xy-y^2$, $-x^2+2xy+3y^2$ and $3x^2-10xy+4y^2$ is $4x^2-7xy+6y^2$

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

The sum of $(x^2 - x + 1)$, $(-5x^2 + 2x - 2)$ and $(3x^2 - 3x + 1)$ is calculated as shown below

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

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

$= x^2 - 2x$

Hence the sum of $(x^2 - x + 1)$, $(-5x^2 + 2x - 2)$ and $(3x^2 - 3x + 1)$ is $-x^2 - 2x$

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

The sum of $(a^2 - ab + bc)$, $(2ab + bc - 2a^2)$ and $(-3bc + 3a^2 + ab)$ is calculated as shown below.

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

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

we get

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

Hence the sum of $(a^2 - ab + bc)$, $(2ab + bc - 2a^2)$ and $(-3bc + 3a^2 + ab)$ is $2a^2 + 2ab - bc$

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

The sum of $(4x^2 + 7 - 3x)$, $(4x - x^2 + 8)$ and $(-10 + 5x - 2x^2)$ is calculated as shown below

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

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

we get,

$= x^2 + 5 + 6x$

Hence the sum of $(4x^2+7-3x)$, $(4x-x^2+8)$ and $(-10+5x-2x^2)$ is x^2+5+6x

(ii) the sum of $(-17x^2 - 2xy + 23y^2)$, $(-9y^2+15x^2+7xy)$ and $(13x^2+3y^2-4xy)$ is calculated as follows

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

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

we get,

$11x^2 + 9xy + 17y^2$

Therefore, the sum of $(-17x^2 - 2xy + 23y^2)$, $(-9y^2+15x^2+7xy)$ and $(13x^2+3y^2-4xy)$ is $11x^2+xy+17y^2$

iii) $-x^2 - 3xy + 3y^2 + 8$, $3x^2 - 5y^2 - 3 + 4xy$ and $-6xy + 2x^2 - 2 + y^2$

The sum of $(-x^2 - 3xy + 3y^2 + 8)$, $(3x^2 - 5y^2 - 3 + 4xy)$ and $(-6xy + 2x^2 - 2 + y^2)$ is calculated as follows:

$(-x^2-3xy+3y^2+8)+(3x^2-5y^2-3+4xy)$
$+(-6xy+2x^2-2+y^2)$
$=-x^2+3x^2+2x^2-3xy-6xy+4xy+$
$3y^2+y^2-5y^2+8-3-2$
we get,
$=4x^2-5xy-y^2+3$
Therefore, the sum of $(-x^2-3xy+3y^2+8)$, $(3x^2-5y^2-3+4xy)$ and $(-6xy+2x^2-2+y^2)$ is $4x^2-5xy-y^2+3$

iii) a^3-2b^3+a, b^3-2a^3+b and $-2b+2b^3-5a+4a^3$
The sum of (a^3-2b^3+a), (b^3-2a^3+b) $+(-2b+2b^3-5a+4a^3)$
$=a^3+4a^3-2a^3-2b^3+b^3+2b^3+a-5a+b-2b$
we get,
$=3a^3+b^3-4a-b$
Therefore, the sum of $(a-b^3+a)$, $(b-2a^3+b)$ and $(-2b+2b^3-5a+4a^3)$ is $3a^3+b^3-4a-b$.

(a)(3) i) $3a-(a+2b)$
The value of the given expression is calculated as below
$3a-(a+2b)$
$=3a-a-2b$
$=2a-2b$
taking 2 as common, we get
$=2(a-b)$

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

The value of the given expression is calculated as below

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

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

$= 4x - 4y$

taking 4 as common, we get

$= 4(x - y)$

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

The value of the given expression is calculated as below

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

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

on calculation, we get

$= 15a + 12b$

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

The value of the given expression is calculated as below

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

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

on further calculation, we get

$= 11x + 3y$

~~the value of~~

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

The value of the given expression is calculated as below

$7 - (4a - 5)$

$= 7 - 4a + 5$

we get
$-12-4a$

(4) iv) $5a-3b+2c$ from $a-4b-2c$
the value of the subtraction is calculated as follows
$(a-4b-2c)-(5a-3b-2c)$
$=a-5a-4b+3b-2c-2c$
we get;
$=-4a-b-4c$

ii) $4x-6y+32$ from $12x+7y-21z$
the value of the subtraction is calculated as follows
$(12x+7y-21z)-(4x-6y+32$
$=12x-4x+7y+6y-21z-32$
on further calculation, we get
$=8x+13y-21z$

iii) $5a-4b+4c$ from $5a-7b+2c$
the value of the subtraction is calculated as follows
$(5a-7b+2c)-(5a-4b+4c)$
$=5a+a-7b+4b+2c-4c-5$
we get;
$=6a-3b-2c-5$

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

The value of the subtraction is calculated as follows

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

$= x + 8x + 12y - y - z - 12z$

we get,

$= 9x + 11y - 13z$

v) $2ab + cd - ac - 2bd$ from $ab - 2b + 3ac + bd$

The value of the subtraction is calculated as follows

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

$= ab - 2ab - 2cd - cd + 3ac + ac + bd + 2bd$

on calculating further, we get

$= -b + ab - 3cd + 3ac + 3bd$

(5) i) The value of the subtraction is calculated as,

$(bc - ca + ab) - (-ab + bc - ca)$

$= bc - bc - ca + ca + ab + ab$

we get,

$= 2ab$

Hence, $(bc - ca + ab) - (-ab + bc - ca) = 2ab$

ii) The value of the subtraction is calculated as,

$(3x+5y-4z)-(5x+6y-3z)$
$= 3x-5x+5y-6y-4z+3z$
on simplification, we get
$= -2x-y-z$
Hence, $(3x+5y-4z)-(5x+6y-3z) = 2x-y-z$

iii) The value of the subtraction is calculated as,
$[(1/2)p-(1/3)q-(3/2)r]-[(-3/2)p+q-r]$
$= (1/2)p+(3/2)p-(1/3)q-q-(3/2)r+r$
on further calculation, we get
$= 2p-(4/3)q-(1/2)r$
Hence $[(1/2)p-(1/3)q-(3/2)r]-[(-3/2)p+q-r] = 2p-(4/3)q-(1/2)r$

iv) The value of the subtraction as, $(a^2+a+1)-(1-a+a^2)$
$= a^2-a^2+a+a+1-1$
we get,
$= a+a$
$= 2a$

(6) Ans The value of terms as for the question is calculated as follows

$(x+y-2z)+(2x-y+z)-(x+y+z)$
$=x+2x-x+y-y-y-2z-z+z$
we get,
$=2x-y-2z$
Therefore, $(x+y-2z)+(2x-y+z)-(x+y+z)=2x-y-2z$

(2) Ans - The value of terms as per the question is calculated as shown below
$(3a-2b+4c+3b-2c-a+b+c)$
on further calculation, we get
$=3a-a+3b+b-2b+4c+c-2c$
$=2a+2b+3c$
Hence, $(3a-2b+4c)+(3b-2c)-(a+b-c)=2a+2b+3c$

(3) Ans - The value of terms as per the question is calculated as follows
$(3x-y+z)+(x+y-3z)-(x-2y-z)$
$=3x+x-x-y+y+2y+z-3z+z$
we get,
$=3x+2y-z$
Therefore $(3x-y+z)+(x+y-3z)-(x-2y-z)=3x+2y-z$

(4) Ans - The value of terms as per the question is calculated as follows
$(x-2z)+(x+y+z)-2(x+y)$

$+(x-z)^3$

on further calculation, we get

$= x+x-x-x+y-y+z+z-zz$

we get,

$= 0$

Therefore, $(x-zz)+(x+y+z)-$

$\&(x+y)+(x-z)^3 = 0$