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EXERCISE - 19 - (B)

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

(ii) $2x^2 + xy - y^2$
$+ -x^2 + 2xy + 3y^2$
$3x^2 - 10xy + 4y^2$
$4x^2 - 7xy + 6y^2$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$= 3a - a - 2b$

$= 2a - 2b$

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

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

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

$= 4x - 4y$

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

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

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

$= 15a + 12b$

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

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

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

$= 11x + 3y$

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

$= 7 - 4a + 5$

$= 7 + 5 - 4a$

$= 12 - 4a$

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

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

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

$= 13y - 14$

Subtract:

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

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

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

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

$= -4a-ab-4c$

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

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

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

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

$= 8x+13y-24z$

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

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

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

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

$= 6a-3b-2c-5$

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

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

$= x-y-z+8x+12y-17z$

$= x+8x+12y-y-z-17z$

$= 9x+11y-18z$

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

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

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

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

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

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

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

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

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

$= 2ab$

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

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

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

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

$= -2x-y-z$

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

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

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

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

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

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

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

ans: $= a^2+a+1-(1-a+a^2)$

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

$= 2a$

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

ans: $= (x+y-z)+(2x-y+z)-(x+y+z)$

$= x+y-z+2x-y+z-x-y-z$

$= x+2x-x+y-y-y+z-z-z$

$= 2x-y-z$

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

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

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

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

$= 2a+2b+3c$

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

Ans:- $(3x-y+z)+(x+y-3z)-(x-2y-z)$

$= 3x-y+z+x+y-3z-x+2y+z$

$= 3x+x-x+2y+y-y+z+z-3z$

$= 3x+2y-z$

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

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

$= x-2z+x+y+z-(x+y+x-z)$

$= x+x+y+z-2z-(x+x+y-z)$

$= 2x+y-z-(2x+y-z)$

$= 2x+y-z-2x-y+z$

$= 2x-2x+y-y+z-z$

$= 0$