20/11/21

Exercise - 11 (B)

Q1. Add:

(i) $-9x$, $3x$ and $4x$

Sol→ $-9x$, $3x$ and $4x$

$= -9x + 3x + 4x$

$= (-9+3+4)x$

$= -2x$ (Ans)

(ii) $23y^2$, $8y^2$ and $-12y^2$

Sol→ $23y^2$, $8y^2$ and $-12y^2$

$= 23y^2 + 8y^2 + (-12y^2)$

$= (23+8-12)y^2$

$= 19y^2$ (Ans)

(iii) $18pq$, $-15pq$ and $3pq$

Sol→ $18pq$, $-15pq$ and $3pq$

$= 18pq + (-15pq) + 3pq$

$= (18-15+3)pq$

$= 6pq$ (Ans)

Q2. Simplify:

(i) $3m + 12m - 5m$

Sol→ $3m + 12m - 5m$

$= (3+12-5)m$

$= 10m$ (Ans)

(ii) $7n^2 - 9n^2 + 3n^2$

Sol→ $7n^2 - 9n^2 + 3n^2$

$= (7-9+3)n^2$

$= 1n^2$ (Ans)

(iii) $25zy - 8zy - 6zy$

Sol→ $25zy - 8zy - 6zy$

$= (25-8-6)zy$

$= 11zy$ (Ans)

(iv) $-5ax^2 + 7ax^2 - 12ax^2$

Sol→ $-5ax^2 + 7ax^2 - 12ax^2$

$= (-5+7-12)ax^2$

$= -10ax^2$ (Ans)

(v) $-16am + 4mx + 4am - 15mx + 5am$

Sol→ $-16am + 4mx + 4am - 15mx + 5am$

$= (-16+4+5)am + (4-15)mx$

$= -7am + (-11)mx$

$= 7am - 11mx$ (Ans)

Q4 Add :

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

Sol: $a+b$ and $2a+3b$
$= a+b+2a+3b$
$= (1+2)a + (1+3)b$
$= 3a+4b$ (Ans)

(ii) $2x+y$ and $3x-4y$

Sol: $2x+y$ and $3x-4y$
$= 2x+y+3x-4y$
$= (2+3)x + (1-4)y$
$= 5x-3y$ (Ans)

(iii) $-3a+2b$ and $3a+b$

Sol: $-3a+2b$ and $3a+b$
$= (-3+3)a + (2+1)b$
$= 0 \times a + 3b$
$= 3b$ (Ans)

(iv) $4+x$, $5-2x$ and $6x$

Sol: $4+x$, $5-2x$ and $6x$
$= 4+x+5-2x+6x$
$= (4+5)+(1-2+6)x$
$= 9+5x$ (Ans)

Q5. Find the sum of :

(i) $3x+8y+7z$, $6y+4z-2x$ and $3y-4x+6z$

Sol: $(3x+8y+7z)+(6y+4z-2x)+(3y-4x+6z)$
$= 3x+8y+7z+6y+4z-2x+3y-4x+6z$
$= 3x-2x-4x+8y+6y+3y+7z+4z+6z$
$= (3-2-4)x+(8+6+3)y+(7+4+6)z$
$= -3x+17y+17z$ (Ans)

(ii) $3a+5b+2c$, $2a+3b-c$ and $a+b+c$

Sol: $3a+5b+2c$, $2a+3b-c$ and $a+b+c$
$= (3a+5b+2c)+(2a+3b-c)+(a+b+c)$
$= (3a+2a+a)+(5b+3b+b)+(2c-c+c)$
$= 6a+9b+2c$ (Ans)

(iii) $4x^2+8xy-2y^2$ and $8xy-5y^2+x^2$

Sol: $(4x^2+8xy-2y^2)+(8xy-5y^2+x^2)$
$= 4x^2+x^2+8xy+8xy-2y^2-5y^2$
$= 5x^2+16xy-7y^2$ (Ans)

(iv) $9x^2-6x+7$, $5-4x$ and $6-3x^2$

Sol: $(9x^2-6x+7)+(5-4x)+(6-3x^2)$

$=(9x^2-3x^2)+(-6x-4x)+(7+6)$

$=6x^2-10x+13$ (Ans)

(v) $5x^2-2xy+3y^2$, $-2x^2+5xy+9y^2$ and $3x^2-xy$

Sol: $(5x^2-2xy+3y^2)+(-2x^2+5xy+9y^2)+(3x^2-xy$

$=(5x^2-2x^2+3x^2)+(-2xy+5xy-xy)+(3y^2+9y^2$

$=6x^2+2xy+8y^2$ (Ans)

(vi) a^2+b^2+2ab, $2b^2+c^2+2bc$ and $4c^2-a^2+2ac$

Sol: $(a^2+b^2+2ab)+(2b^2+c^2+2bc)+(4c^2-a^2+2ac)$

$=(a^2-a^2)+(b^2+2b^2)+2ab+2bc+2ac+(c^2+4c^2$

$=3b^2+2ab+2bc+2ac+5c^2$ (Ans)

(vii) $9ax-6bx+8$, $4ax+8bx-7$ and $-6ax-4bx-3$

Sol: $(9ax-6bx+8)+(4ax+8bx-7)+(-6ax-4bx-3$

$=(9ax+4ax-6ax)+(-6bx+8bx-4bx)+(8-7-3$

$=7ax+(-2bx)+(-2)$

$=7ax-2bx-2$ (Ans)

(viii) $abc+2ba+3ac$, $4ca-4ab+2bca$ and $2ab-3abc-6ac$

Sol: $(abc+2ba+3ac)+(4ca-4ab+2bca)+(2ab-3abc-6ac)$

$=(abc+2bca-3abc)+(2ba-4ab+2ab)+(3ac+4ca-6ac)$

$=(3abc-3abc)+(4ab-4ab)+(7ac-6ac)$

$=0+0+ac$

$=ac$ (Ans)

(ix) $4a^2+5b^2-6ab$, $3ab$, $6a^2-2b^2$ and $4b^2-5ab$

Sol→ $(4a^2+5b^2-6ab)+3ab+(6a^2-2b^2)+(4b^2-5ab)$

$=(4a^2+6a^2)+(5b^2-2b^2+4b^2)+(-6ab+3ab-5ab)$

$=10a^2+(7b^2)-8ab$ (Ans)

(x) x^2+x-2, $2x-3x^2+5$ and $2x^2-5x+7$

Sol→ $(x^2+x-2)+(2x-3x^2+5)+(2x^2-5x+7)$

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

$=(3x^2-3x^2)+(3x-5x)+(-2+12)$

$=0+(-2x)+10$

$=-2x+10$ (Ans)

(xi) $4x^3+2x^2-x^2+1$, $2x^3-5x^2-3x+6$, x^2+8 and $5x^3-7x$

Sol→ $(4x^3+2x^2-x+1)+(2x^3-5x^2-3x+6)+(x^2+8)+(5x^3-7x)$

$=(4x^3+2x^3+5x^3)+(2x^2-5x^2+x^2)+(-x-3x-7x)+(1+6+8)$

$=11x^3+(3x^2-5x^2)+(-x-10x)+15$

$=11x^3-2x^2-11x+15$ (Ans)

Q6. Find the sum of:

(i) x and $3y$

Sol→ x and $3y$

$=x+3y$ (Ans)

(ii) $-2a$ and $+5$

Sol→ $-2a$ and $+5$

$=-2a+5$ (Ans)

(iii) $-4x^2$ and $+7x$

Sol→ $-4x^2$ and $+7x$

$=-4x^2+7x$ (Ans)

(iv) $+4a$ and $-7b$

Sol→ $+4a$ and $-7b$

$=4a-7b$ (Ans)

(v) x^3, $3x^2y$ and $2y^3$

Sol→ x^3, $3x^2y$ and $2y^3$

$= x^3 + 3x^2y + 2y^3$ (Ans)

(vi) 11 and $-by$

Sol 11 and $-by$

$11 - by$ (Ans)

Q7. The sides of a triangle are $2x+3y$, $x+5y$ and $7x-2y$. Find its perimeter.

Sol→ Given sides of triangle are -

$2x+3y$, $x+5y$ and $7x-2y$

We know that -

Perimeter of triangle = sum of all sides

$= 2x+3y+x+5y+7x-2y$

$= 10x + 6y$ (Ans)

Q8. The two adjacent sides of a rectangle are $6a+9b$ and $8a-4b$. Find its perimeter.

Sol→ Given two adjacent sides of a rectangle -

$6a+9b$ and $8a-4b$

Perimeter of a rectangle $= 2(L+b)$

$= 2(6a+9b+8a-4b)$

$= 2(14a+5b)$

$= 28a + 10b$ (Ans)

Q9. Subtract the second expression from the first:

(i) $2a+b$, $a+b$

Sol→ $2a+b$, $a+b$

$= -(a+b) + (2a+b)$

$= -a \mp b + 2a \mp b$

$= \mp a$ (Ans)

(ii) $-2b+2c$, $b+3c$

Sol→ $-2b+2c$, $b+3c$

$= -(b+3c) + (-2b+2c)$

$= -b \mp 3c \mp 2b + 2c$

$= -3b \mp c$ (Ans)

(iii) $5a+b, -6b+2a$

Sol: $5a+b, -6b+2a$

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

$= 5a+b+6b-2a$

$= 3a+7b$ (Ans)

(iv) $a^3-1+a, 3a-2a^2$

Sol: $a^3-1+a, 3a-2a^2$

$= a^3-1+a-(3a-2a^2)$

$= a^3-1+a-3a+2a^2$

$= a^3+2a^2-2a-1$

(v) $P+2, 1$

Sol: $P+2, 1$

$= P+2-1$

$= P+1$ (Ans)

(vi) $x+2y+z, -x-y-3z$

Sol: $x+2y+z, -x-y-3z$

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

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

$= 2x+3y+4z$ (Ans)

(vii) $3a^2-8ab-2b^2, 3a^2-4ab+6b^2$

Sol: $3a^2-8ab-2b^2, 3a^2-4ab+6b^2$

$= 3a^2-8ab-2b^2-(3a^2-4ab+6b^2)$

$= 3a^2-8ab-2b^2-3a^2+4ab-6b^2$

$= -4ab-8b^2$ (Ans)

(viii) $4pq - 6p^2 - 2q^2$, $9p^2$

Sol→ $4pq - 6p^2 - 2q^2, 9p^2$

$= 4pq - 6p^2 - 2q^2 - 9p^2$

$= 4pq - 15p^2 - 2q^2$ (Ans)

(ix) $10abc$, $2a^2 + 2abc - 4b^2$

Sol→ $10abc, 2a^2 + 2abc - 4b^2$

$= 10abc - (2a^2 + 2abc - 4b^2)$

$= 10abc - 2a^2 - 2abc + 4b^2$

$= -2a^2 + 4b^2 + 8abc$ (Ans)

(x) $a^2 + ab + c^2$, $a^2 - d^2$

Sol→ $a^2 + ab + c^2, a^2 - d^2$

$= a^2 + ab + c^2 - (a^2 - d^2)$

$= a^2 + ab + c^2 - a^2 + d^2$

$= ab + c^2 + d^2$ (Ans)

Q10 Subtract :

(i) $4x$ from $8 - x$

Sol→ $4x$ from $8 - x$

$= (8 - x) - 4x$

$= 8 - x - 4x$

$= 8 - 5x$ (Ans)

(ii) $-8c$ from $c + 3d$

Sol→ $-8c$ from $c + 3d$

$= c + 3d - (-8c)$

$= c + 3d + 8c$

$= 9c + 3d$ (Ans)

(iii) $-5a - 2b$ from $b + 6c$

Sol→ $-5a - 2b$ from $b + 6c$

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

$= b + 6c + 5a + 2b$

$= 5a + 3b + 6c$ (Ans)

(iv) $4P + P^2$ from $3P^2 - 8P$

Sol→ $4P + P^2$ from $3P^2 - 8P$

$= 3P^2 - 8P - (4P + P^2)$

$= 3P^2 - 8P - 4P - P^2$

$= 2P^2 - 12P$ (Ans)

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

Sol: $5a-3b+2c$ from $4a-b=2c$

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

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

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

(vi) $-xy+yz-zx$ from $xy-yz+zx$

Sol: $-xy+yz-zx$ from $xy-yz+zx$

$= xy-yz+zx-(-xy+yz-zx)$

$= xy-yz+zx+xy-yz+zx$

$= 2xy-2yz+2zx$

$= 2(xy-yz+zx)$ (Ans)

(vii) $2x^2-7xy-y^2$ from $3x^2-5xy+3y^2$

Sol: $2x^2-7xy-y^2$ from $3x^2-5xy+3y^2$

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

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

$= x^2+2xy+4y^2$ (Ans)

(viii) $a^2-3ab+6b^2$ from $2b^2-a^2+2ab$

Sol: $a^2-3ab-6b^2$ from $2b^2-a^2+2ab$

$= 2b^2-a^2+2ab-(a^2-3ab+6b^2)$

$= 2b^2-a^2+2ab-a^2+3ab+6b^2$

$= 7b^2-2a^2+5ab$ (Ans)

(ix) $4x^2-5x^2y+y^2$ from $-3y^2+5xy^2-7x^2-9x^2y$

Sol: $4x^2-5x^2y+y^2$ from $-3y^2+5xy^2-7x^2-9x^2y$

$= -3y^2+5xy^2-7x^2-9x^2y-(4x^2-5x^2y+y^2)$

$= -3y^2+5xy^2-7x^2-9x^2y-4x^2+5x^2y-y^2$

$= -4y^2+5xy^2-12x^2-4x^2y$ (Ans)

(x) $6m^3+4m^2+7m-3$ from $3m^3+4$

Sol) $6m^3+4m^2+7m-3$ from $3m^3+4$

$= 3m^3+4-(6m^3+4m^2+7m-3)$

$= 3m^3+4-6m^3-4m^2-7m+3$

$= -3m^3-4m^2-7m+7$ (Ans)