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Exercise - 19 - (A)

1. (i) $5+4=9$ and $5x+4x=9x$

(ii) $12+18=30$ and $12x^2y+18x^2y=30x^2y$

(iii) $7+16=23$ and $7a+16b=7a+16b$

(iv) $1+3=4$ and $x^2y+3xy^2=x^2y+3xy^2$

(v) $7-4=3$ and $7ab-4ab=3ab$

(vi) $12-5=7$ and $12x-5y=12x-5y$

(vii) $35-16=19$ and $35ab-16ba=19ab$

(viii) $28-13=15$ and $28ax^2-13a^2x=28ax^2-13a^2x$

2. (i) The sum of -2 and $-5=-7$ and the sum of $-2x$ and $-5x=-7x$

(ii) The sum of 8 and $-3=5$ and the sum of $8ab$ and $-3ab=5ab$

(iii) The sum of -15 and $-4=-19$ and the sum of $-15x$ and $-4y=-15x-4y$

(iv) $15+8+3=26$ and $15x+8y+3x=18x+8y$

(v) $12-9+15=18$ and $12xab-9ab+15ab=18ab$

(vi) $25-7-9=9$ and $25xy-7xy-9yx=9xy$

(vii) $-4-6-5=-15$ and $4ax-6ax-5ay=-10ax-5ay$

3(i) $8xy+3xy=(8+3)xy=11xy$

(ii) $2xyz+xyz+6xyz=(2+1+6)xyz=9xyz$

(iii) $2a+3a+4b=(2+3)a+4b=5a+4b$

(iv) $3x+2y=3x+2y$

(v) $5m+3n+4p=5m+3n+4p$

(vi) $6a+3a+9ab=(6+3)a+9ab=9a+9ab$

(vii) $3p+4q+9q=3p+(4+9)q=3p+13q$

(viii) $5ab+4ba+6b=(5+4)ab+6b=9ab+6b$

(ix) $50pq+30pq+10pr=(50+30)pq+10pr=80pq+10pr$

(x) $(-2y)+(-y)+(-3y)=(-2-1-3)y=-6y$

(xi) $(-3b)+(-b)=(-3-1)b=-4b$

(xii) $5b+(-4b)+(-10b)=(5-4-10)b=-9b$

(xiii) $(-2c)+(-c)+(-5c)=(-2-1-5)c=-8c$

4(i) $6a-a-5a-2a=(6-1-5-2)a=(6-8)a=-2a$

(ii) $2b-3b-b+4b=(2-3-1+4)b=(2+4-3-1)b$
$=(6-4)b=2b$

(iii) $3x-2x-4x+7x=(3-2-4+7)x=$
$=(3+7-2-4)x$
$=(10-6)x$
$=4x$

(iv) $5ab+2ab-6ab+ab=(5+2-6+1)ab$
$=(5+2+1-6)ab$
$=(8-6)ab$
$=2ab$

(v) $8x-5y-3x+10y=8x-3x+10y-5y$
$=(8-3)x+(10-5)y$
$=5x+5y$

(5)(i) $-7x+9x+2x-2x=(-7+9+2-2)x$
$=(9+2-7-2)x$
$=(11-9)x$
$=2x$

(ii) $5ab-2ab-8ab+6ab=(5-2-8+6)ab$
$=(5+6-2-8)ab$
$=(11-10)ab$
$=ab$

(iii) $-8a-3a+12a+13a-6a=(-8-3+12+13-6)a$
$=(12+13-8-3)a$
$=(25-17)a$
$=18a$

(iv) $19abc-11abc-12abc+14abc$
$=(19-11-12+14)abc$
$=(19+14-11-12)abc$
$=(33-23)abc=10abc$

6(i) $6ba - 4ab = (6-4)ab$
$= 2ab$

(ii) $6.8b - 4.8b = (6.8-4.8)b$
$= 2b$

(iii) $10.5abc - 3.5abc = (10.5-3.5)abc$
$= 7abc$

(iv) $8\frac{1}{2}mn - 3\frac{1}{2}mn$
$= (8\frac{1}{2} - 3\frac{1}{2})mn$
$= (\frac{17}{2} - \frac{7}{2})mn$
$= (\frac{17-7}{2})mn$
$= \frac{10}{2}mn = 5mn$

7(i) $2a^2b^2 + 5ab^2 + 8a^2b^2 - 3ab^2$
$= 2a^2b^2 + 8a^2b^2 + 5ab^2 - 3ab^2$
$= (2+8)a^2b^2 + (5-3)ab^2$
$= 10a^2b^2 + 2ab^2$

(ii) $4a + 3b - 2a - b$
$= 4a - 2a + 3b - b$
$= (4-2)a + (3-1)b$
$= 2a + 2b$

(iii) $2xy + 4yz + 5xy + 3yz - 6xy$
$= 2xy + 5xy - 6xy + 4yz + 3yz$
$= (2+5-6)xy + (4+3)yz$
$= xy + 7yz$

(iv) $ab + 15ab - 11ab - 2ab$
$= (1 + 15 - 11 - 2)ab$
$= (16 - 13)ab$
$= 3ab$

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

(vi) $8abc + 2ab - 4abc + ab$
$= 8abc - 4abc + 2ab + ab$
$= (8 - 4)abc + (2 + 1)ab$
$= 4abc + 3ab$

(vii) $9xyz + 15yxz - 10zyx - 22xy$
$= (9 + 15 - 10 - 22)xyz$
$= (24 - 12)xyz$
$= 12xyz$

(viii) $13pqrs + 2p + 4q - 6pqrs + 5pqrs$
$= 13pqrs + 5pqrs - 6pqrs + 2p + 4q$
$= (13 + 5 - 6)pqrs + 2p + 4q$
$= 12pqrs + 2p + 4q$

(ix) $4ab + 0 - 2ba$
$= 4ab - 2ba$
$= (4 - 2)ab$
$= 2ab$

(x) $6x^2y - 2xy^2 + 5x^2y - xy^2$
$= 6x^2y + 5x^2y - 2xy^2 - xy^2$
$= (6 + 5)x^2y - (2 + 1)xy^2$
$= 11x^2y - 3xy^2$