

## EXERCISE 7.2

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**1. Add the following:**

(i)  $3x$  and  $7x$

(ii)  $-5xy$  and  $9xy$

**Solution:**

(i) Given  $3x$  and  $7x$

$$\begin{aligned} 3x + 7x &= (3 + 7) x \\ &= 10x \end{aligned}$$

(ii) Given  $-5xy$  and  $9xy$

$$\begin{aligned} -5xy + 9xy &= (-5 + 9) xy \\ &= 4xy \end{aligned}$$

**2. Simplify each of the following:**

(i)  $7x^3y + 9yx^3$

(ii)  $12a^2b + 3ba^2$

**Solution:**

(i) Given  $7x^3y + 9yx^3$

$$\begin{aligned} 7x^3y + 9yx^3 &= (7 + 9) x^3y \\ &= 16x^3y \end{aligned}$$

(ii) Given

$$\begin{aligned} 12a^2b + 3ba^2 &= (12 + 3) a^2b \\ &= 15a^2b \end{aligned}$$

**3. Add the following:**

(i)  $7abc$ ,  $-5abc$ ,  $9abc$ ,  $-8abc$

(ii)  $2x^2y$ ,  $-4x^2y$ ,  $6x^2y$ ,  $-5x^2y$

**Solution:**

(i) Given  $7abc$ ,  $-5abc$ ,  $9abc$ ,  $-8abc$

$$\begin{aligned} \text{Consider } &7abc + (-5abc) + (9abc) + (-8abc) \\ &= 7abc - 5abc + 9abc - 8abc \end{aligned}$$

$$\begin{aligned} &= (7 - 5 + 9 - 8) abc \text{ [by taking abc common]} \\ &= (16 - 13) abc \\ &= 3abc \end{aligned}$$

$$\begin{aligned} \text{(ii) Given } &2x^2y, -4x^2y, 6x^2y, -5x^2y \\ &2x^2y + (-4x^2y) + (6x^2y) + (-5x^2y) \\ &= 2x^2y - 4x^2y + 6x^2y - 5x^2y \\ &= (2 - 4 + 6 - 5) x^2y \text{ [by taking } x^2y \text{ common]} \\ &= (8 - 9) x^2y \\ &= -x^2y \end{aligned}$$

**4. Add the following expressions:**

**(i)  $x^3 - 2x^2y + 3xy^2 - y^3, 2x^3 - 5xy^2 + 3x^2y - 4y^3$**

**(ii)  $a^4 - 2a^3b + 3ab^3 + 4a^2b^2 + 3b^4, -2a^4 - 5ab^3 + 7a^3b - 6a^2b^2 + b^4$**

**Solution:**

**(i) Given  $x^3 - 2x^2y + 3xy^2 - y^3, 2x^3 - 5xy^2 + 3x^2y - 4y^3$**

Collecting positive and negative like terms together, we get

$$\begin{aligned} &= x^3 + 2x^3 - 2x^2y + 3x^2y + 3xy^2 - 5xy^2 - y^3 - 4y^3 \\ &= 3x^3 + x^2y - 2xy^2 - 5y^3 \end{aligned}$$

**(ii) Given  $a^4 - 2a^3b + 3ab^3 + 4a^2b^2 + 3b^4, -2a^4 - 5ab^3 + 7a^3b - 6a^2b^2 + b^4$**

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

Collecting positive and negative like terms together, we get

$$\begin{aligned} &= a^4 - 2a^4 - 2a^3b + 7a^3b + 3ab^3 - 5ab^3 + 4a^2b^2 - 6a^2b^2 + 3b^4 + b^4 \\ &= -a^4 + 5a^3b - 2ab^3 - 2a^2b^2 + 4b^4 \end{aligned}$$

**5. Add the following expressions:**

**(i)  $8a - 6ab + 5b, -6a - ab - 8b$  and  $-4a + 2ab + 3b$**

**(ii)  $5x^3 + 7 + 6x - 5x^2, 2x^2 - 8 - 9x, 4x - 2x^2 + 3x^3, 3x^3 - 9x - x^2$  and  $x - x^2 - x^3 - 4$**

**Solution:**

**(i) Given  $8a - 6ab + 5b, -6a - ab - 8b$  and  $-4a + 2ab + 3b$**

$$= (8a - 6ab + 5b) + (-6a - ab - 8b) + (-4a + 2ab + 3b)$$

Collecting positive and negative like terms together, we get

$$\begin{aligned} &= 8a - 6a - 4a - 6ab - ab + 2ab + 5b - 8b + 3b \\ &= 8a - 10a - 7ab + 2ab + 8b - 8b \end{aligned}$$

$$= -2a - 5ab$$

(ii) Given  $5x^3 + 7 + 6x - 5x^2$ ,  $2x^2 - 8 - 9x$ ,  $4x - 2x^2 + 3x^3$ ,  $3x^3 - 9x - x^2$  and  $x - x^2 - x^3 - 4 =$   
 $(5x^3 + 7 + 6x - 5x^2) + (2x^2 - 8 - 9x) + (4x - 2x^2 + 3x^3) + (3x^3 - 9x - x^2) + (x - x^2 - x^3 - 4)$

Collecting positive and negative like terms together, we get

$$5x^3 + 3x^3 + 3x^3 - x^3 - 5x^2 + 2x^2 - 2x^2 - x^2 - x^2 + 6x - 9x + 4x - 9x + x + 7 - 8 - 4$$
$$= 10x^3 - 7x^2 - 7x - 5$$

**6. Add the following:**

(i)  $x - 3y - 2z$

$$5x + 7y - 8z$$

$$3x - 2y + 5z$$

(ii)  $4ab - 5bc + 7ca$

$$-3ab + 2bc - 3ca$$

$$5ab - 3bc + 4ca$$

**Solution:**

(i) Given  $x - 3y - 2z$ ,  $5x + 7y - 8z$  and  $3x - 2y + 5z$

$$= (x - 3y - 2z) + (5x + 7y - 8z) + (3x - 2y + 5z)$$

Collecting positive and negative like terms together, we get

$$= x + 5x + 3x - 3y + 7y - 2y - 2z - 8z + 5z$$

$$= 9x - 5y + 7y - 10z + 5z$$

$$= 9x + 2y - 5z$$

(ii) Given  $4ab - 5bc + 7ca$ ,  $-3ab + 2bc - 3ca$  and  $5ab - 3bc + 4ca$

$$= (4ab - 5bc + 7ca) + (-3ab + 2bc - 3ca) + (5ab - 3bc + 4ca)$$

Collecting positive and negative like terms together, we get

$$= 4ab - 3ab + 5ab - 5bc + 2bc - 3bc + 7ca - 3ca + 4ca$$

$$= 9ab - 3ab - 8bc + 2bc + 11ca - 3ca$$

$$= 6ab - 6bc + 8ca$$

**7. Add  $2x^2 - 3x + 1$  to the sum of  $3x^2 - 2x$  and  $3x + 7$ .**

**Solution:**

Given  $2x^2 - 3x + 1$ ,  $3x^2 - 2x$  and  $3x + 7$

sum of  $3x^2 - 2x$  and  $3x + 7$

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

$$\begin{aligned} &= 3x^2 - 2x + 3x + 7 \\ &= (3x^2 + x + 7) \\ \text{Now, required expression} &= 2x^2 - 3x + 1 + (3x^2 + x + 7) \\ &= 2x^2 + 3x^2 - 3x + x + 1 + 7 \\ &= 5x^2 - 2x + 8 \end{aligned}$$

**8. Add  $x^2 + 2xy + y^2$  to the sum of  $x^2 - 3y^2$  and  $2x^2 - y^2 + 9$ .**

**Solution:**

Given  $x^2 + 2xy + y^2$ ,  $x^2 - 3y^2$  and  $2x^2 - y^2 + 9$ .

First we have to find the sum of  $x^2 - 3y^2$  and  $2x^2 - y^2 + 9$

$$\begin{aligned} &= (x^2 - 3y^2) + (2x^2 - y^2 + 9) \\ &= x^2 + 2x^2 - 3y^2 - y^2 + 9 \\ &= 3x^2 - 4y^2 + 9 \end{aligned}$$

Now, required expression =  $(x^2 + 2xy + y^2) + (3x^2 - 4y^2 + 9)$

$$\begin{aligned} &= x^2 + 3x^2 + 2xy + y^2 - 4y^2 + 9 \\ &= 4x^2 + 2xy - 3y^2 + 9 \end{aligned}$$

**9. Add  $a^3 + b^3 - 3$  to the sum of  $2a^3 - 3b^3 - 3ab + 7$  and  $-a^3 + b^3 + 3ab - 9$ .**

**Solution:**

Given  $a^3 + b^3 - 3$ ,  $2a^3 - 3b^3 - 3ab + 7$  and  $-a^3 + b^3 + 3ab - 9$ .

First, we need to find the sum of  $2a^3 - 3b^3 - 3ab + 7$  and  $-a^3 + b^3 + 3ab - 9$ .

$$= (2a^3 - 3b^3 - 3ab + 7) + (-a^3 + b^3 + 3ab - 9)$$

Collecting positive and negative like terms together, we get

$$\begin{aligned} &= 2a^3 - a^3 - 3b^3 + b^3 - 3ab + 3ab + 7 - 9 \\ &= a^3 - 2b^3 - 2 \end{aligned}$$

Now, the required expression =  $(a^3 + b^3 - 3) + (a^3 - 2b^3 - 2)$ .

$$\begin{aligned} &= a^3 + a^3 + b^3 - 2b^3 - 3 - 2 \\ &= 2a^3 - b^3 - 5 \end{aligned}$$

**10. Subtract:**

(i)  $7a^2b$  from  $3a^2b$

(ii)  $4xy$  from  $-3xy$

**Solution:**

(i) Given  $7a^2b$  from  $3a^2b$

$$\begin{aligned} &= 3a^2b - 7a^2b \\ &= (3 - 7) a^2b \\ &= -4a^2b \end{aligned}$$

$$\begin{aligned} \text{(ii) Given } 4xy \text{ from } -3xy \\ &= -3xy - 4xy \\ &= -7xy \end{aligned}$$

**11. Subtract:**

**(i) - 4x from 3y**

**(ii) - 2x from - 5y**

**Solution:**

$$\begin{aligned} \text{(i) Given - 4x from 3y} \\ &= (3y) - (-4x) \\ &= 3y + 4x \end{aligned}$$

$$\begin{aligned} \text{(ii) Given - 2x from - 5y} \\ &= (-5y) - (-2x) \\ &= -5y + 2x \end{aligned}$$

**12. Subtract:**

**(i)  $6x^3 - 7x^2 + 5x - 3$  from  $4 - 5x + 6x^2 - 8x^3$**

**(ii)  $-x^2 - 3z$  from  $5x^2 - y + z + 7$**

**(iii)  $x^3 + 2x^2y + 6xy^2 - y^3$  from  $y^3 - 3xy^2 - 4x^2y$**

**Solution:**

$$\begin{aligned} \text{(i) Given } 6x^3 - 7x^2 + 5x - 3 \text{ and } 4 - 5x + 6x^2 - 8x^3 \\ &= (4 - 5x + 6x^2 - 8x^3) - (6x^3 - 7x^2 + 5x - 3) \\ &= 4 - 5x + 6x^2 - 8x^3 - 6x^3 + 7x^2 - 5x + 3 \\ &= -8x^3 - 6x^3 + 7x^2 + 6x^2 - 5x - 5x + 3 + 4 \\ &= -14x^3 + 13x^2 - 10x + 7 \end{aligned}$$

$$\begin{aligned} \text{(ii) Given } -x^2 - 3z \text{ and } 5x^2 - y + z + 7 \\ &= (5x^2 - y + z + 7) - (-x^2 - 3z) \\ &= 5x^2 - y + z + 7 + x^2 + 3z \\ &= 5x^2 + x^2 - y + z + 3z + 7 \end{aligned}$$

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

(iii) Given  $x^3 + 2x^2y + 6xy^2 - y^3$  and  $y^3 - 3xy^2 - 4x^2y$

$$\begin{aligned} &= (y^3 - 3xy^2 - 4x^2y) - (x^3 + 2x^2y + 6xy^2 - y^3) \\ &= y^3 - 3xy^2 - 4x^2y - x^3 - 2x^2y - 6xy^2 + y^3 \\ &= y^3 + y^3 - 3xy^2 - 6xy^2 - 4x^2y - 2x^2y - x^3 \\ &= 2y^3 - 9xy^2 - 6x^2y - x^3 \end{aligned}$$

### 13. From

(i)  $p^3 - 4 + 3p^2$ , take away  $5p^2 - 3p^3 + p - 6$

(ii)  $7 + x - x^2$ , take away  $9 + x + 3x^2 + 7x^3$

(iii)  $1 - 5y^2$ , take away  $y^3 + 7y^2 + y + 1$

(iv)  $x^3 - 5x^2 + 3x + 1$ , take away  $6x^2 - 4x^3 + 5 + 3x$

### Solution:

(i) Given  $p^3 - 4 + 3p^2$ , take away  $5p^2 - 3p^3 + p - 6$

$$= (p^3 - 4 + 3p^2) - (5p^2 - 3p^3 + p - 6)$$

$$= p^3 - 4 + 3p^2 - 5p^2 + 3p^3 - p + 6$$

$$= p^3 + 3p^3 + 3p^2 - 5p^2 - p - 4 + 6$$

$$= 4p^3 - 2p^2 - p + 2$$

(ii) Given  $7 + x - x^2$ , take away  $9 + x + 3x^2 + 7x^3$

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

$$= 7 + x - x^2 - 9 - x - 3x^2 - 7x^3$$

$$= -7x^3 - x^2 - 3x^2 + 7 - 9$$

$$= -7x^3 - 4x^2 - 2$$

(iii) Given  $1 - 5y^2$ , take away  $y^3 + 7y^2 + y + 1$

$$= (1 - 5y^2) - (y^3 + 7y^2 + y + 1)$$

$$= 1 - 5y^2 - y^3 - 7y^2 - y - 1$$

$$= -y^3 - 5y^2 - 7y^2 - y$$

$$= -y^3 - 12y^2 - y$$

(iv) Given  $x^3 - 5x^2 + 3x + 1$ , take away  $6x^2 - 4x^3 + 5 + 3x$

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

$$= x^3 - 5x^2 + 3x + 1 - 6x^2 + 4x^3 - 5 - 3x$$

$$= x^3 + 4x^3 - 5x^2 - 6x^2 + 1 - 5$$

$$= 5x^3 - 11x^2 - 4$$

14. From the sum of  $3x^2 - 5x + 2$  and  $-5x^2 - 8x + 9$  subtract  $4x^2 - 7x + 9$ .

**Solution:**

First we have to add  $3x^2 - 5x + 2$  and  $-5x^2 - 8x + 9$  then from the result we have to subtract  $4x^2 - 7x + 9$ .

$$\begin{aligned} &= \{(3x^2 - 5x + 2) + (-5x^2 - 8x + 9)\} - (4x^2 - 7x + 9) \\ &= \{3x^2 - 5x + 2 - 5x^2 - 8x + 9\} - (4x^2 - 7x + 9) \\ &= \{3x^2 - 5x^2 - 5x - 8x + 2 + 9\} - (4x^2 - 7x + 9) \\ &= \{-2x^2 - 13x + 11\} - (4x^2 - 7x + 9) \\ &= -2x^2 - 13x + 11 - 4x^2 + 7x - 9 \\ &= -2x^2 - 4x^2 - 13x + 7x + 11 - 9 \\ &= -6x^2 - 6x + 2 \end{aligned}$$

15. Subtract the sum of  $13x - 4y + 7z$  and  $-6z + 6x + 3y$  from the sum of  $6x - 4y - 4z$  and  $2x + 4y - 7$ .

**Solution:**

First we have to find the sum of  $13x - 4y + 7z$  and  $-6z + 6x + 3y$   
Therefore, sum of  $(13x - 4y + 7z)$  and  $(-6z + 6x + 3y)$

$$\begin{aligned} &= (13x - 4y + 7z) + (-6z + 6x + 3y) \\ &= (13x - 4y + 7z - 6z + 6x + 3y) \\ &= (13x + 6x - 4y + 3y + 7z - 6z) \\ &= (19x - y + z) \end{aligned}$$

Now we have to find the sum of  $(6x - 4y - 4z)$  and  $(2x + 4y - 7)$

$$\begin{aligned} &= (6x - 4y - 4z) + (2x + 4y - 7) \\ &= (6x - 4y - 4z + 2x + 4y - 7) \\ &= (6x + 2x - 4z - 7) \\ &= (8x - 4z - 7) \end{aligned}$$

Now, required expression =  $(8x - 4z - 7) - (19x - y + z)$

$$\begin{aligned} &= 8x - 4z - 7 - 19x + y - z \\ &= 8x - 19x + y - 4z - z - 7 \\ &= -11x + y - 5z - 7 \end{aligned}$$

16. From the sum of  $x^2 + 3y^2 - 6xy$ ,  $2x^2 - y^2 + 8xy$ ,  $y^2 + 8$  and  $x^2 - 3xy$  subtract  $-3x^2 + 4y^2 - xy + x - y + 3$ .

**Solution:**

$$\begin{aligned} &\text{First we have to find the sum of } (x^2 + 3y^2 - 6xy), (2x^2 - y^2 + 8xy), (y^2 + 8) \text{ and } (x^2 - 3xy) \\ &= \{(x^2 + 3y^2 - 6xy) + (2x^2 - y^2 + 8xy) + (y^2 + 8) + (x^2 - 3xy)\} \\ &= \{x^2 + 3y^2 - 6xy + 2x^2 - y^2 + 8xy + y^2 + 8 + x^2 - 3xy\} \\ &= \{x^2 + 2x^2 + x^2 + 3y^2 - y^2 + y^2 - 6xy + 8xy - 3xy + 8\} \\ &= 4x^2 + 3y^2 - xy + 8 \end{aligned}$$

Now, from the result subtract the  $-3x^2 + 4y^2 - xy + x - y + 3$ .

$$\begin{aligned} &\text{Therefore, required expression} = (4x^2 + 3y^2 - xy + 8) - (-3x^2 + 4y^2 - xy + x - y + 3) \\ &= 4x^2 + 3y^2 - xy + 8 + 3x^2 - 4y^2 + xy - x + y - 3 \\ &= 4x^2 + 3x^2 + 3y^2 - 4y^2 - x + y - 3 + 8 \\ &= 7x^2 - y^2 - x + y + 5 \end{aligned}$$

**17. What should be added to  $xy - 3yz + 4zx$  to get  $4xy - 3zx + 4yz + 7$ ?**

**Solution:**

By subtracting  $xy - 3yz + 4zx$  from  $4xy - 3zx + 4yz + 7$ , we get the required expression.

$$\begin{aligned} &\text{Therefore, required expression} = (4xy - 3zx + 4yz + 7) - (xy - 3yz + 4zx) \\ &= 4xy - 3zx + 4yz + 7 - xy + 3yz - 4zx \\ &= 4xy - xy - 3zx - 4zx + 4yz + 3yz + 7 \\ &= 3xy - 7zx + 7yz + 7 \end{aligned}$$

**18. What should be subtracted from  $x^2 - xy + y^2 - x + y + 3$  to obtain  $-x^2 + 3y^2 - 4xy + 1$ ?**

**Solution:**

Let 'E' be the required expression. Then, we have

$$\begin{aligned} &x^2 - xy + y^2 - x + y + 3 - E = -x^2 + 3y^2 - 4xy + 1 \\ &\text{Therefore, } E = (x^2 - xy + y^2 - x + y + 3) - (-x^2 + 3y^2 - 4xy + 1) \\ &= x^2 - xy + y^2 - x + y + 3 + x^2 - 3y^2 + 4xy - 1 \end{aligned}$$

Collecting positive and negative like terms together, we get

$$\begin{aligned} &= x^2 + x^2 - xy + 4xy + y^2 - 3y^2 - x + y + 3 - 1 \\ &= 2x^2 + 3xy - 2y^2 - x + y + 2 \end{aligned}$$

**19. How much is  $x - 2y + 3z$  greater than  $3x + 5y - 7$ ?**

**Solution:**

By subtracting  $x - 2y + 3z$  from  $3x + 5y - 7$  we can get the required expression,

$$\text{Required expression} = (x - 2y + 3z) - (3x + 5y - 7)$$

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

Collecting positive and negative like terms together, we get

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

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

**20. How much is  $x^2 - 2xy + 3y^2$  less than  $2x^2 - 3y^2 + xy$ ?**

**Solution:**

By subtracting the  $x^2 - 2xy + 3y^2$  from  $2x^2 - 3y^2 + xy$  we can get the required expression,

$$\text{Required expression} = (2x^2 - 3y^2 + xy) - (x^2 - 2xy + 3y^2)$$

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

Collecting positive and negative like terms together, we get

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

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

**21. How much does  $a^2 - 3ab + 2b^2$  exceed  $2a^2 - 7ab + 9b^2$ ?**

**Solution:**

By subtracting  $2a^2 - 7ab + 9b^2$  from  $a^2 - 3ab + 2b^2$  we get the required expression

$$\text{Required expression} = (a^2 - 3ab + 2b^2) - (2a^2 - 7ab + 9b^2)$$

$$= a^2 - 3ab + 2b^2 - 2a^2 + 7ab - 9b^2$$

Collecting positive and negative like terms together, we get

$$= a^2 - 2a^2 - 3ab + 7ab + 2b^2 - 9b^2$$

$$= -a^2 + 4ab - 7b^2$$

**22. What must be added to  $12x^3 - 4x^2 + 3x - 7$  to make the sum  $x^3 + 2x^2 - 3x + 2$ ?**

**Solution:**

Let 'E' be the required expression. Thus, we have

$$12x^3 - 4x^2 + 3x - 7 + E = x^3 + 2x^2 - 3x + 2$$

$$\text{Therefore, } E = (x^3 + 2x^2 - 3x + 2) - (12x^3 - 4x^2 + 3x - 7)$$

$$= x^3 + 2x^2 - 3x + 2 - 12x^3 + 4x^2 - 3x + 7$$

Collecting positive and negative like terms together, we get

$$= x^3 - 12x^3 + 2x^2 + 4x^2 - 3x - 3x + 2 + 7$$

$$= -11x^3 + 6x^2 - 6x + 9$$

**23. If  $P = 7x^2 + 5xy - 9y^2$ ,  $Q = 4y^2 - 3x^2 - 6xy$  and  $R = -4x^2 + xy + 5y^2$ , show that  $P + Q + R$**

= 0.

**Solution:**

Given  $P = 7x^2 + 5xy - 9y^2$ ,  $Q = 4y^2 - 3x^2 - 6xy$  and  $R = -4x^2 + xy + 5y^2$

Now we have to prove  $P + Q + R = 0$ ,

Consider  $P + Q + R = (7x^2 + 5xy - 9y^2) + (4y^2 - 3x^2 - 6xy) + (-4x^2 + xy + 5y^2)$

$= 7x^2 + 5xy - 9y^2 + 4y^2 - 3x^2 - 6xy - 4x^2 + xy + 5y^2$

Collecting positive and negative like terms together, we get

$= 7x^2 - 3x^2 - 4x^2 + 5xy - 6xy + xy - 9y^2 + 4y^2 + 5y^2$

$= 7x^2 - 7x^2 + 6xy - 6xy - 9y^2 + 9y^2$

$= 0$

**24. If  $P = a^2 - b^2 + 2ab$ ,  $Q = a^2 + 4b^2 - 6ab$ ,  $R = b^2 + b$ ,  $S = a^2 - 4ab$  and  $T = -2a^2 + b^2 - ab + a$ . Find  $P + Q + R + S - T$ .**

**Solution:**

Given  $P = a^2 - b^2 + 2ab$ ,  $Q = a^2 + 4b^2 - 6ab$ ,  $R = b^2 + b$ ,  $S = a^2 - 4ab$  and  $T = -2a^2 + b^2 - ab + a$

Now we have to find  $P + Q + R + S - T$

Substituting all values we get

Consider  $P + Q + R + S - T = \{(a^2 - b^2 + 2ab) + (a^2 + 4b^2 - 6ab) + (b^2 + b) + (a^2 - 4ab)\} - (-2a^2 + b^2 - ab + a)$

$= \{a^2 - b^2 + 2ab + a^2 + 4b^2 - 6ab + b^2 + b + a^2 - 4ab\} - (-2a^2 + b^2 - ab + a)$

$= \{3a^2 + 4b^2 - 8ab + b\} - (-2a^2 + b^2 - ab + a)$

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

Collecting positive and negative like terms together, we get

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

$= 5a^2 + 3b^2 - 7ab - a + b$