

## MATHS

### BOOKS - RS AGGARWAL MATHS (HINGLISH)

#### ALGEBRAIC EXPRESSION

##### Example

1. Add:  $5x^2 - 7x + 3$ ,  $-8x^2 + 2x - 5$  and  $7x^2 - x - 2$

A.  $4x^2 + 6x - 4$

B.  $4x^2 - 6x - 4$

C.  $4x^2 - 6x + 4$

D.  $4x^2 + 6x + 4$

**Answer: B**



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**2.**

**Add:**

$$\left(3x^2 - \frac{1}{5}x + \frac{7}{3}\right) + \left(\frac{-1}{4}x^2 + \frac{1}{3}x - \frac{1}{6}\right) + \left(-2x^2 - \frac{1}{2}x + 5\right)$$



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**3. Subtract  $(2x^2 - 5x + 7)$  from  $(3x^2 + 4x - 6)$**

A.  $x^2 + 9x + 13$

B.  $x^2 - 9x + 13$

C.  $x^2 + 9x - 13$

D.  $x^2 - 9x - 13$

**Answer: C**



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4. Take away  $\left(\frac{8}{5}x^2 - \frac{2}{3}x^3 + \frac{3}{2}x - 1\right)$  from  $\left(\frac{x^3}{5} - \frac{3}{2}x^2 + \frac{2}{3}x + \frac{1}{4}\right)$



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## Solved Examples

1. Multiply:

(i)  $6ab$  by  $4b$

(ii)  $5ab^2c^3$  by  $7a^2bc$

(iii)  $-6x^2yz$  by  $\frac{2}{3}xy^3z^2$

(iv)  $\frac{-8}{5}a^2bc^3$  by  $\frac{-3}{4}ab^2c$

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2. Multiply:

(i)  $-8ab^2c$ ,  $3a^2b$  and  $-\frac{1}{6}$

(ii)

$\frac{5}{8}a^3b^2$ ,  $12a^2b$  and  $6c$

(iii)  $4$ ,  $\frac{5}{12}x$  and  $-8x^2y$

(iv)  $-a$ ,  $a^2bc$  and  $\frac{-2}{5}ab^2c^2$

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3. Multiply  $\frac{-4}{3}xy^3$  by  $\frac{6}{7}x^2y$  and verify your result for  $x = 2$  and  $y =$

1

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4. Multiply:  $(-5x^2y)$ ,  $\left(\frac{-2}{3}xy^2z\right)$ ,  $\left(\frac{8}{15}xyz^3\right)$  and  $\left(\frac{-1}{4}z\right)$

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5. Multiply  $3x$  by  $(2x + 5y)$

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6. Multiply  $(3xy + 2y)$  by  $5xy$ .

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7. Multiply  $\frac{9}{2}x^2y$  by  $(x + 2y)$

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8. Multiply  $\left(3x - \frac{4}{5}y^2x\right)$  by  $\frac{1}{2}xy$ .

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9. Multiply  $(3x + 5y)$  and  $(5x - 7y)$

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10. Multiply  $(3x^2 + y^2)$  by  $(2x^2 + 3y^2)$

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11. Multiply  $\left(\frac{1}{5}x - \frac{1}{4}y\right)$  and  $(5x^2 - 4y^2)$

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12. Multiply  $(5x^2 - 6x + 9)$  by  $(2x - 3)$



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## Exercise 6 A

1. Add the following expressions:

(i)  $5x, 7x, -6x$

(ii)  $\frac{3}{5}x, \frac{2}{3}x, -\frac{4}{5}x$

(iii)  $5a^2b, -8a^2b, 7a^2b$

(iv)  $\frac{3}{4}x^2, 5x^2, -3x^2, -\frac{1}{4}x^2$

(v)  $x - 3y + 4z, y - 2x - 8z, 5x - 2y - 3z$

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

(vii)  $5x - 2x^2 - 8, 8x^2 - 7x - 9, 3 + 7x^2 - 2x$

(viii)  $\frac{2}{3}a - \frac{4}{5}b + \frac{3}{5}c, -\frac{3}{4}a - \frac{5}{2}b + \frac{2}{3}c, \frac{5}{2}a + \frac{7}{4} - \frac{5}{6}c$

(ix)  $\frac{8}{5}x + \frac{11}{7}y + \frac{9}{4}xy, -\frac{3}{2}x - \frac{5}{3}y - \frac{9}{5}xy$

(x)

$$\frac{3}{2}x^3 - \frac{1}{4}x^2 + \frac{5}{3}, -\frac{5}{4}x^3 + \frac{3}{5}x^2 - x + \frac{1}{5}, -x^2 + \frac{3}{8}x - \frac{8}{15}$$



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2. Subtract:

(i)  $-8xy$  from  $7xy$

(ii)  $x^2$  from  $-3x^2$

(iii)  $(x - y)$  from  $(4y - 5x)$

(iv)  $(a^2 + b^2 - 2ab)$  from  $(a^2 + b^2 + 2ab)$

(v)  $(x^2 - y^2)$  from  $(2x^2 - 3y^2 + 6xy)$

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



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3. Subtract  $(2a - 3b + 4c)$  from the sum of  $(a + 3b - 4c)$ ,  $(4a - b + 9c)$  and  $(-2b + 3c - a)$





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4. Subtract the sum of  $(8m - 7n + 6p^2)$  and  $(-3m - 4n - p^2)$  from the sum of  $(2m + 4n - 3p^2)$  and  $(-m - n - p^2)$



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5. Subtract the sum of  $(8a - 6a^2 + 9)$  and  $(-10a - 8 + 8a^2)$  from -3



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6. Simplify :

(i)  $(5x - 9y) - (-7x + y)$

(ii)  $(x^2 - x) - \frac{1}{2}(x - 3 + 3x^2)$

$$(iii) [7 - 2x + 5y - (x - y)] - (5x + 3y - 7)$$

$$(iv) \left(\frac{1}{3}y^2 - \frac{4}{7}y + 5\right) - \left(\frac{2}{7}y - \frac{2}{3}y^2 + 2\right) - \left(\frac{1}{7}y - 3 + 2y^2\right)$$

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## Exercise 6 B

1. Find the products

$$3a^2 \times 8a^2$$

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2. Find the products

$$6x^3 \times 5x^2$$

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3. Find the products

$$[-4ab] \times [-3a^2bc]$$

A.  $-12a^3b^3c$

B.  $12a^3b^3c$

C.  $12a^3b^2c$

D.  $-12a^3b^2c$

**Answer: C**



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4. Find the products

$$(2a^2b^3) \times (-3a^3b)$$



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5. Find the products

$$\frac{2}{3}x^2y \times \frac{3}{5}xy^2$$



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6. Find the products

$$\left(\frac{-3}{4}ab^3\right) \times \left(\frac{-2}{3}a^2b^4\right)$$



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7. Find the products

$$\left(\frac{-1}{27}a^2b^2\right) \times \left(\frac{-9}{2}a^3bc^2\right)$$



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8. Find the products  $\left(\frac{-13}{5}ab^2c\right) \times \left(\frac{7}{3}a^2bc^2\right)$



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9. Find the products

$$\left(\frac{-18}{5}x^2z\right) \times \left(\frac{-25}{6}xz^2y\right)$$



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10. Find the products

$$\left(\frac{-3}{14}xy^4\right) \times \left(\frac{7}{6}x^3y\right)$$



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11. Find the products

$$\left(\frac{-7}{5}x^2y\right) \times \left(\frac{3}{2}xy^2\right) \times \left(\frac{-6}{5}x^3y^3\right)$$



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12. Find the products

$$(2a^2b) \times (-5ab^2c) \times (-6bc^2)$$



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13. Find the products

$$(-4x^2) \times (-6xy^2) \times (-3y)$$



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14. Find the products

$$\left(-\frac{3}{5}s^2t\right) \times \left(\frac{15}{7}st^2u\right) \times \left(\frac{7}{9}su^2\right)$$



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15. Find the products

$$\left(\frac{-2}{7}u^4v\right) \times \left(\frac{-14}{5}uv^3\right) \times \left(\frac{-3}{4}u^2v^3\right)$$



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16. Find the products

$$(ab^2) \times (-b^2c) \times (-a^2c^3) \times (-3abc)$$



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17. Find the products

$$\left(\frac{4}{3}x^2yz\right) \times \left(\frac{1}{3}y^2zx\right) \times (-6xyz^2)$$



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18. Multiply  $-\frac{2}{3}a^2b$  by  $\frac{6}{5}a^3b^2$  and verify your result for  $a = 2$  and  $b = 3$

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19. Multiply  $-\frac{8}{21}x^2y^3$  by  $-\frac{7}{16}xy^2$  and verify your result for  $x = 3$  and  $y = 2$

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20. Find the value of  $(2.3a^5b^2) \times (1.2a^2b^2)$  when  $a = 1$  and  $b = 0.5$

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21. Find the value of  $(-8u^2v^6) \times (-20uv)$  for  $u = 2.5$  and  $v = 1$ .

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22. Find the products given below and in each case verify the result for  $a=1, b=2$  and  $c=3$ :

$$\left(\frac{2}{5}a^2b\right) \times (-15b^2ac) \times \left(-\frac{1}{2}c^2\right)$$

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23. Find the products given below and in each case verify the result for  $a=1, b=2$  and  $c=3$ :

$$\left(\frac{1}{4}abc\right) \times (-6b^2c) \times \left(-\frac{1}{3}c^3\right)$$

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24. Find the products given below and in each case verify the result for  $a=1, b=2$  and  $c=3$ :

$$\left(\frac{4}{9}abc^3\right) \times \left(\frac{-27}{5}a^3b^3\right) \times (-8b^3c)$$



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25. Find the products given below and in each case verify the result for  $a=1, b=2$  and  $c=3$ :

$$\left(\frac{-4}{7}a^2b\right) \times \left(\frac{-2}{3}b^2c\right) \times \left(\frac{-7}{6}c^2a\right)$$



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## Exercise 6 C

1. Find each of the following products

$$4a(3a + 7b)$$



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2. Find each of the following products

$$5a(6a - 3b)$$

A.  $30a^2 - 15ab$

B.  $30a - 15b$

C.  $-30a^2 + 15ab$

D. None of these

**Answer: A**



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3. Find each of the following products

$$8a^2(2a + 5b)$$



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4. Find each of the following products

$$9x^2(5x + 7)$$



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5. Find each of the following products

$$ab(a^2 - b^2)$$

A.  $a^3b - ab^3$

B.  $a^3b + ab^3$

C.  $-a^3b + ab^3$

D. none

**Answer: A**



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6. Find each of the following products

$$2x^2(3x - 4x^2)$$



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7. Find each of the following products

$$\frac{3}{5}m^2n(m + 5n)$$



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8. Find each of the following products

$$-17x^2(3x - 4)$$



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9. Find each of the following products

$$\frac{7}{2}x^2\left(\frac{4}{7}x + 2\right)$$



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10. Find each of the following products

$$-4x^2y(3x^2 - 5y)$$



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11. Find each of the following products

$$-\frac{4}{27}xyz\left(\frac{9}{2}x^2yz - \frac{3}{4}xyz^2\right)$$



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**12.** Find each of the following products

$$9t^2(t + 7t^3)$$



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**13.** Find each of the following products

$$10a^2(0.1a - 0.5b)$$



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**14.** Find each of the following products

$$1.5a(10a^2b - 100ab^2)$$



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15. Find each of the following products

$$\frac{2}{3}abc(a^2 + b^2 - 3c^2)$$

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16. Find the product  $24x^{24}(1 - 2x)$  and evaluate it for  $x = 2$ .

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17. Find the product  $ab(a^2 + b^2)$  and evaluate it for  $a = 2$  and  $b = 3$ .

A. 26

B. 78

C. 86

D. 54



**Answer: B**

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**18.** Find the product  $s(s^2 - st)$  and find its value  $s = 2$  and  $t = 3$ .

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**19.** Find the product  $-3y(xy + y^2)$  and find its value for  $x = 4$  and  $y = 5$

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**20.** Simplify each of the following

$$a(b - c) + b(c - a) + c(a - b)$$

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21. Simplify each of the following

$$a(b - c) - b(c - a) - c(a - b)$$

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22. Simplify each of the following

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

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23. Simplify each of the following

$$x(x + 4) + 3x(2x^2 - 1) + 4x^2 + 4$$

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24. Simplify each of the following

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



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25. Simplify each of the following

$$a^2b(a - b^2) + ab^2(4ab - 2a^2) - a^3b(1 - 2b)$$



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26. Simplify each of the following

$$4st(s - t) - 6s^2(t - t^2) - 3t^2(2s^2 - s) + 2st(s - t)$$



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1. Find the each of the following products:

$$(5x + 7)(3x + 4)$$



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2. Find the each of the following products:

$$(4x - 3)(2x + 5)$$



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3. Find the each of the following products:

$$(x - 6)(4x + 9)$$



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4. Find the each of the following products:

$$(5y - 1)(3y - 8)$$



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5. Find the each of the following products:

$$(7x + 2y)(x + 4y)$$



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6. Find the each of the following products:

$$(9x + 5y)(4x + 3y)$$



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7. Find the each of the following products:

$$(3m - 4n)(2m - 3n)$$

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8. Find the each of the following products:

$$(0.8x - 0.5y)(1.5x - 3y)$$

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9. Find the each of the following products:

$$\left(\frac{1}{5}x + 2y\right)\left(\frac{2}{3}x - y\right)$$

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10. Find the each of the following products:

$$\left(\frac{2}{5}x - \frac{1}{2}y\right)(10x - 8y)$$



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11. Find the each of the following products:

$$\left(\frac{3}{4}a + \frac{2}{3}b\right)(4a + 3b)$$



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12. Find the each of the following products:

$$(x^2 - a^2)(x - a)$$



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13. Find the each of the following products:

$$(3p^2 + q^2)(2p^2 - 3q^2)$$



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14. Find the each of the following products:

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



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15. Find the each of the following products:

$$(x^3 - y^3)(x^2 + y^2)$$



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16. Find the each of the following products:

$$(x^4 + y^4)(x^2 - y^2)$$

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17. Find the each of the following products:

$$\left(x^4 + \frac{1}{x^4}\right)\left(x + \frac{1}{x}\right)$$

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18. Find the each of the following products:

$$(x^2 - y^2)(x + 2y)$$

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19. Find the each of the following products:

$$(2x + 3y - 5)(x + y)$$



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20. Find the each of the following products:

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



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21. Find the each of the following products:

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



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22. Find the each of the following products:

$$(3x^2 + 5x - 9)(3x - 9)$$

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23. Find the each of the following products:

$$(9x^2 - x + 15)(x^2 - 3)$$

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24. Find the each of the following products:

$$(x^2 + xy + y^2)(x - y)$$

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25. Find the each of the following products:

$$(x^2 - xy + y^2)(x + y)$$



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26. Find the each of the following products:

$$(x^2 - 5x + 8)(x^2 + 2)$$



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27. Simplify:  $(3x + 4)(2x - 3) + (5x - 4)(x + 2)$



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28. Simplify:  $(5x - 3)(x + 4) - (2x + 5)(3x - 4)$



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29. Simplify:

$$(9x - 7)(2x - 5) - (3x - 8)(5x - 3)$$

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30. Simplify:

$$(2x + 5y)(3x + 4y) - (7x + 3y)(2x + y)$$

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31. Simplify:

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

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