



## Factorisation trinôme carré non parfait

Pour se dépasser !

### METHODE 1 : décomposer un terme

$2x^2 + 15x + 7$ $2x^2+x+14x+7$ $x(2x+1)+7(2x+1)$ $(2x+1)(x+7)$	$10x^2 - 3x - 18$ $10x^2-15x+12x-18$ $5x(2x-3)+6(2x-3)$ $(2x-3)(5x+6)$
$3x^2 + 17x + 10$ $3x^2+15x+2x+10$ $3x(x+5)+2(x+5)$ $(x+5)(3x+2)$	$8x^2 - 22x - 21$ $8x^2-28x+6x-21$ $4x(2x-7)+3(2x-7)$ $(2x-7)(4x+3)$
$6x^2 + 23x + 20$ $6x^2+15x+8x+20$ $3x(2x+5)+4(2x+5)$ $(2x+5)(3x+4)$	$10x^2 - 97x - 30$ $10x^2-100x+3x-30$ $10x(x-10)+3(x-10)$ $(x-10)(10x+3)$
$7x^2 - 12x - 4$ $7x^2-14x+2x-4$ $7x(x-2)+2(x-2)$ $(x-2)(7x+2)$	$7x^2 - 16x + 9$ $7x^2-7x-9x+9$ $7x(x-1)-9(x-1)$ $(x-1)(7x-9)$
$6x^2 + 23x - 4$ $6x^2+24x-1x-4$ $6x(x+4)-1(x+4)$ $(x+4)(6x-1)$	$7x^2 - 10x + 3$ $7x^2-7x-3x+3$ $7x(x-1)-3(x-1)$ $(x-1)(7x-3)$

## METHODE 2 : Complétion

$$x^2 + 8x - 48 =$$

$$= x^2 + 8x + 16 - 16 - 48$$

$$= (x+4)^2 - 64$$

$$= (x+4)^2 - 8^2$$

$$= (x+4+8)(x+4-8)$$

$$= (x+12)(x-4)$$

$$x^2 - 5x - 36 =$$

$$= x^2 - 5x + \frac{25}{4} - \frac{25}{4} - 36$$

$$= \left(x - \frac{5}{2}\right)^2 - \frac{169}{4}$$

$$= \left(x - \frac{5}{2}\right)^2 - \left(\frac{13}{2}\right)^2$$

$$= \left(x - \frac{5}{2} + \frac{13}{2}\right)\left(x - \frac{5}{2} - \frac{13}{2}\right)$$

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

$$x^2 + 10x + 21$$

$$= x^2 + 10x + 25 - 25 + 21$$

$$= (x+5)^2 - 4$$

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

$$= (x+5+2)(x+5-2)$$

$$= (x+7)(x+3)$$

$$x^2 - 16x + 55 =$$

$$= x^2 - 16x + 64 - 64 + 55$$

$$= (x-8)^2 - 9$$

$$= (x-8)^2 - 3^2$$

$$= (x-8+3)(x-8-3)$$

$$= (x-5)(x-11)$$

$$x^2 - 9x + 20$$

$$= x^2 - 9x + \frac{81}{4} - \frac{81}{4} + 20$$

$$= \left(x - \frac{9}{2}\right)^2 - \frac{1}{4}$$

$$= \left(x - \frac{9}{2}\right)^2 - \left(\frac{1}{2}\right)^2$$

$$= \left(x - \frac{9}{2} + \frac{1}{2}\right)\left(x - \frac{9}{2} - \frac{1}{2}\right)$$

$$= (x-4)(x-5)$$

$$2x^2 + 13x + 15 =$$

$$= 2\left(x^2 + \frac{13}{2}x + \frac{15}{2}\right)$$

$$= 2\left(x^2 + \frac{13}{2}x + \frac{169}{16} - \frac{169}{16} + \frac{15}{2}\right)$$

$$= 2\left(\left(x + \frac{13}{4}\right)^2 - \frac{49}{16}\right)$$

$$= 2\left(\left(x + \frac{13}{4}\right)^2 - \left(\frac{7}{4}\right)^2\right)$$

$$= 2\left(\left(x + \frac{13}{4} + \frac{7}{4}\right)\left(x + \frac{13}{4} - \frac{7}{4}\right)\right)$$

$$= 2(x+5)\left(x + \frac{3}{2}\right)$$

$$= 2(x+5)(2x+3)$$

A decorative border of tennis rackets surrounds the page. The rackets are arranged in a rectangular frame, with the top and bottom edges having 18 rackets each, and the left and right edges having 20 rackets each. Each racket is green with a yellow handle and a small cartoon character on the head.

*METHODE 3 : Somme et produit*



METHODE 4 : Horner