

Quelques factorisations

$$(1) 9x^3 - 7x^2 = x^2(9x - 7)$$

$$(2) 5(x+1)(x-3) - 4(x+1) = (x+1)[5(x-3) - 4] \\ = (x+1)(5x - 19)$$

$$(3) 25x^2 - 121 = (5x)^2 - 11^2 = (5x+11)(5x-11)$$

avec l'identité remarquable: $a^2 - b^2 = (a+b)(a-b)$

$$(4) x^2 - 13 = x^2 - (\sqrt{13})^2 = (x + \sqrt{13})(x - \sqrt{13})$$

$$(5) (3x+1)(x-7) - 2x(6x+2) = (3x+1)(x-7) - 2x \cdot 2(3x+1) \\ = (3x+1)[(x-7) - 4x] = (3x+1)(-3x-7)$$

$$(6) x^2 + 2x + 1 + (2x+4)(x+1) = \underbrace{(x+1)^2} + (2x+4)(x+1) = (x+1)[(x+1) + (2x+4)] \\ = (x+1)(3x+5)$$

$$(7) (7-2x)(3x+4) + 3(2x+1)(7-2x) = (7-2x)(3x+4) - 3(2x+1)(7-2x) \\ = (7-2x)[(3x+4) - (6x+3)] = (7-2x)(-3x-7)$$

$$(8) 5(7x^2+x) - 3(x+8)(4x+2) = 5x(7x+1) - 3(x+8)2(2x+1) = (7x+1)[5x - (6x+16)] \\ = (7x+1)[-x-16]$$

$$(9) x^2 - 49 + (3x-4)(x-7) + 2(2x+4) = (x+7)(x-7) + (3x-4)(x+7) + 4(x+7) \\ = (x+7)[(x-7) + (3x-4) + 4] = (x+7)(-8x+1)$$

$$(10) (2x-6)^2 + (x-3) = (2(x-3))^2 + (x-3) = 4(x-3)^2 + (x-3) \\ = (x-3)[4(x-3) + 1] = (x-3)(4x-11)$$

$$(11) 9(4x^2 - 4x + 1) + (6x-3)x - 2x+1 = 9(2x-1)^2 + 3(2x-1)x - (2x-1) \\ = (2x-1)[9(2x-1) + 3x - 1] = (2x-1)(21x-10)$$

$$(12) x^3 + x^2 - x - 1 = x^2(x+1) - (x+1) = (x+1)[x^2 - 1] \\ = (x+1)(x+1)(x-1) \\ = (x+1)^2(x-1)$$