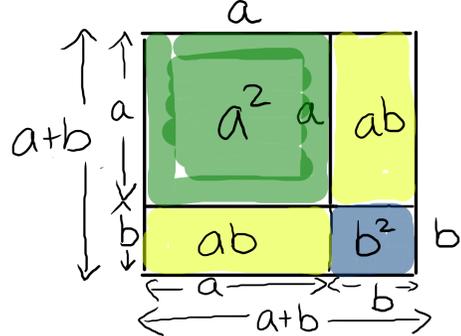


Ex 2.1.2



$$a) (a+b)^2 = a^2 + 2ab + b^2 = (a+b)(a+b) = a^2 + ab + ab + b^2$$

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

$$c) (a+b)(a-b) = a^2 - b^2 = a^2 + ab - ab - b^2$$

$$d) (a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3 = (a+b)(a+b)(a+b) = (a^2 + 2ab + b^2)(a+b)$$

$$= a^3 + a^2b + 2a^2b + 2ab^2 + ab^2 + b^3$$

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

Exemples :

$$1) (x + 2y)^3 = x^3 + 3 \cdot x^2 \cdot 2y + 3 \cdot x \cdot \overset{4y^2}{(2y)^2} + (2y)^3$$

$$= x^3 + 6x^2y + 12xy^2 + 8y^3$$

$$2) (x^2 - y)^3 = (x^2)^3 - 3(x^2)^2y + 3x^2 \cdot y^2 - y^3$$

$$= x^6 - 3x^4y + 3x^2y^2 - y^3$$

$$3) (2a - 3)^3 = (2a)^3 - 3(2a)^2 \cdot 3 + 3 \cdot 2a \cdot 3^2 - 3^3$$

$$= 8a^3 - 36a^2 + 54a - 27$$

ex 1.25

+ 1.26 → f)

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

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



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

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

exemples:

$$1) (3x+1)(9x^2-3x+1) = (3x)^3 + 1^3 = 27x^3 + 1$$

$$2) (x+2)^3 = x^3 + 3x^2 \cdot 2 + 3x \cdot 2^2 + 8 = x^3 + 6x^2 + 12x + 8$$

$$3) (x+2)(x^2-2x+4) = x^3 + 8$$

$$4) (2x-5)(4x^2+10x+25) - (2x-5)^2$$

$$= 8x^3 - 125 - (4x^2 - 20x + 25)$$

$$= 8x^3 - 125 - 4x^2 + 20x - 25$$

$$= 8x^3 - 4x^2 + 20x - 150$$

← polynôme de degré 3

ex 1.26 (feuille) d) e) f) g) h)

ex 2.1.4 a) b) d) e) f) g)

Ex feuille

$$\begin{aligned} \text{d) } (3x - 4y)^3 &= (3x)^3 - 3 \overbrace{(3x)^2}^{9x^2} \cdot 4y + 3 \cdot 3x \overbrace{(4y)^2}^{16y^2} - (4y)^3 \\ &= \underline{27x^3 - 108x^2y + 144xy^2 - 64y^3} \end{aligned}$$

$$\begin{aligned} \text{e) } (2x^2 - 3y^5)^3 &= (2x^2)^3 - 3(2x^2)^2 \cdot 3y^5 + 3 \cdot 2x^2 \cdot (3y^5)^2 - (3y^5)^3 \\ &= \underline{8x^6 - 36x^4y^5 + 54x^2y^{10} - 27y^{15}} \end{aligned}$$