Factoriser

Développer, réduire

$$(A+B)^2 = (A+B)(A+B)$$

$$= A^2 + AB + BA + B^2$$

$$= A^2 + 2AB + B^2$$

TECHNIQUE

Factoriser

« ART »

développer

$$(X+1)^5 = X^5 + 5X^4 + 10X^3 + 10X^2 + 5X + 1$$

$$= (X+1)(X+1)(X+1)(X+1)(X+1)$$

factoriser

$$X^5 + 4X^4 + 3X^3 + 11X^2 + 7X + 11$$

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1

Factoriser $n = 2468$

2, 3, 5, 7, 11, 13, 17, 19, ... premiers

Exemple : Factoriser n

$n = 4$: $4 = 2 \cdot 2$

$n = 30$: $30 = 15 \cdot 2 = 5 \cdot 3 \cdot 2$

$n = 146$: $146 = 73 \cdot 2$

$n = 2468$: $2468 = 2 \cdot 1234 = 2 \cdot 2 \cdot 617$

617 premier

$n = 1000$: $10^3 = (2 \cdot 5)^3 = 2^3 \cdot 5^3$

$10 \cdot 10 \cdot 10 = 2 \cdot 5 \cdot 2 \cdot 5 \cdot 2 \cdot 5 = 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5 \cdot 5$

$n = 1524$: $2 \cdot 762 = 2 \cdot 2 \cdot 381 = 2 \cdot 2 \cdot 3 \cdot 127$

$500 \cdot 2 = 250 \cdot 2 \cdot 2 = 125 \cdot 2 \cdot 2 \cdot 2$

$= 5 \cdot 5 \cdot 5 \cdot 2 \cdot 2 \cdot 2$

Factoriser des polynômes

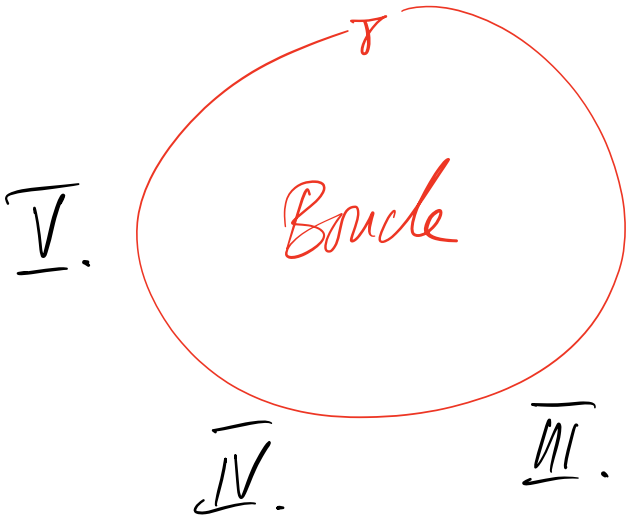
I. Mise en évidence

II. Identités remarquables

III.

IV.

V.



I. Mise en évidence

$$AB + AC + AD = A \cdot (B + C + D)$$

« Mettre devant un bloc commun »

2.21

c) $a^3x^2 - a^2x^3 =$

$a^2x^2 \cdot a - a^2x^2 \cdot x =$

$a^2x^2 \cdot (a - x) = \underbrace{a \cdot a \cdot x \cdot x \cdot (a - x)}$

5 facteurs du 1er degré

d) $2u(2v - w) = 4uv - 2uw$

$= 2u \cdot 2v - 2u \cdot w$

$= 2u(2v - w)$

e) $6a^2 + 4ab = 2a \cdot 3a + 2a \cdot 2 \cdot b$

$= 2a \cdot (3a + 2b)$

2.1.9 i

$$[x(x+y)-y(x-y)](x+y)-xy(x+y)=$$

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

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

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