Sommes

$$\sum_{i=1}^{9} i = 1+2+3+4+5+6+7+8+9$$

$$= 1+2+\ldots+9$$

$$\sum_{i=1}^{9} (3i^2 - 2i + 1)$$

$$\sum_{i=1}^{3} k_i = k_1 + k_2 + k_3$$

$$\sum_{i=1}^{5} x_i = x_1 + x_2 + x_3 + x_4 + x_5$$

$$=$$

a) 23

b) 13

c) 23

d) 719

e) 63

f) 184

$$\sum_{i=1}^{n} k = \underbrace{k + k + k + \cdots + k}_{n \text{ fois}}$$

$$\sum_{k=1}^{n} \frac{1}{k^2} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \dots + \frac{1}{n^2}$$

$$\left(\sum_{i=1}^{n} y_i \right)^2 \neq \sum_{i=1}^{n} y_i^2$$

$$\sum_{0 \leq n+m \leq 5} \frac{1}{n+m}$$

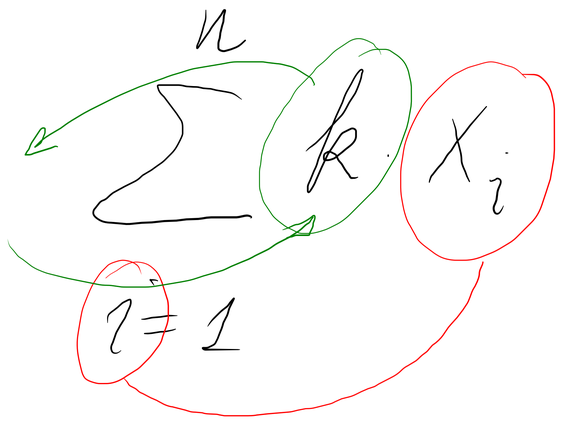
$$\sum_{\substack{i=2 \\ i \text{ pair}}}^{10} i^2$$

$$\sum_{i=1}^{5} (2i)^2$$

$$\sum_{i=0}^{n} (-1)^i = (-1)^0 + (-1)^1 + (-1)^2 + (-1)^3 + \dots + (-1)^{n-1} + (-1)^n$$

$$= 1 + (-1) + 1 + (-1) + \dots +$$

$n+1$ termos



$$= k \cdot x_1 + k \cdot x_2 + \dots + k \cdot x_n$$

$$= k(x_1 + \dots + x_n)$$

$$= k \sum_{i=1}^{n} x_i$$

$$\sum (x_i + y_i) = \sum x_i + \sum y_i$$

$$= (x_1 + y_1) + (x_2 + y_2) + \dots$$

$$= x_1 + x_2 + \dots$$

$$+ y_1 + y_2 + \dots$$

$$\sum (k x_i) = k \sum x_i$$

$$\sum (x_i + y_i) = \sum x_i + \sum y_i$$

linearità

$$(f+g)' = f' + g'$$

$$(k \cdot f)' = k \cdot f'$$

$$(x^5 + x^3)' = (x^5)' + (x^3)'$$

$$\int f+g = \int f + \int g$$

$$\int kf = k\int f$$

$$\sum_{n=0}^{\infty} \frac{x^n}{n!}$$

Théorème

Si $T(x+y) = T(x) + T(y)$

et que $T(kx) = k\,T(x)$

$$\sum_{k=1}^{n} n = n \cdot \sum_{k=1}^{n} 1$$

$$= n \underbrace{(1+1+\cdots+1)}_{n \text{ fois}} = n \cdot n$$

$$0! = 1$$

$$1! = 1$$

$$2! = 2 \cdot 1$$

$$3! = 3 \cdot 2 \cdot 1$$

$$4! = 4 \cdot 3 \cdot 2 \cdot 1$$

$$C_k^n = \frac{n!}{(n-k)!\,k!}$$

$$n! = n \cdot (n-1) \cdot (n-2) \cdot \ldots \cdot 2 \cdot 1$$

$$\sum_{k=1}^{n} \frac{(k+1)!}{k} = \sum_{k=1}^{n} \frac{(k+1)k(k-1)!}{k} = \sum_{k=1}^{n} (k+1)(k-1)$$

$$(k+1)! = (k+1)(k+1-1)(k+1-2)(k+1-3) \cdots 1$$

$$= (k+1)\,k(k-1)(k-2) \cdots 1$$

$$8! = 8 \cdot 7!$$

$$= 8 \cdot 7 \cdot 6 \cdot 5!$$

$$\sum_{k=1}^{n} (n \cdot 1) = n \sum_{k=1}^{n} 1 = n \cdot n = n^2$$

$$\sum_{k=1}^{1} 1 = 1$$

$$\sum_{k=1}^{2} 2 = 2 + 2$$

$$\sum_{k=1}^{3} 3 = 3 + 3 + 3$$

$$\sum_{i=1}^{n} \frac{n}{i} = \frac{n}{1} + \frac{n}{2} + \cdots$$