Números de Stirling

Números de Stirling de primera clase

$$\begin{bmatrix} k+1 \\ \ell \end{bmatrix} = \begin{bmatrix} k \\ \ell-1 \end{bmatrix} + k \begin{bmatrix} k \\ \ell \end{bmatrix}$$

$$\begin{bmatrix} k \\ \ell \end{bmatrix} = 0 \quad \text{para } \ell > k$$

$$\begin{bmatrix} k \\ k \end{bmatrix} = 1$$

$$\begin{bmatrix} k \\ 1 \end{bmatrix} = (k-1)!$$

$$\sum_{1 \le \ell \le k} \begin{bmatrix} k \\ \ell \end{bmatrix} = k!$$

$$\frac{\ln(1+t)^\ell}{\ell!} = (-1)^\ell \sum_{k \ge \ell} (-1)^k \begin{bmatrix} k \\ \ell \end{bmatrix} \frac{t^k}{k!}$$

Números de Stirling de segunda clase

$$\begin{Bmatrix} k+1 \\ \ell \end{Bmatrix} = \begin{Bmatrix} k \\ \ell-1 \end{Bmatrix} + \ell \begin{Bmatrix} k \\ \ell \end{Bmatrix}$$

$$\begin{Bmatrix} k \\ \ell \end{Bmatrix} = 0 \quad \text{para } \ell > k$$

$$\begin{Bmatrix} k \\ k \end{Bmatrix} = 1$$

$$\begin{Bmatrix} k \\ 1 \end{Bmatrix} = 1$$

$$\sum_{1 \le \ell \le k} \begin{Bmatrix} k \\ \ell \end{Bmatrix} = \text{el } k\text{-ésimo número de Bell}$$

$$\frac{(e^t-1)^\ell}{\ell!} = \sum_{k \ge \ell} \begin{Bmatrix} k \\ \ell \end{Bmatrix} \frac{t^k}{k!}$$

$$\begin{Bmatrix} k \\ \ell \end{Bmatrix} = \frac{(-1)^\ell}{\ell!} \sum_{0 \le i \le \ell} (-1)^i \binom{\ell}{i} i^k$$

$$B_k = (-1)^k \sum_{0 \le \ell \le k} \frac{(-1)^\ell \, \ell! \begin{Bmatrix} k \\ \ell \end{Bmatrix}}{\ell+1} = (-1)^k \sum_{0 \le \ell \le k} \frac{1}{\ell+1} \sum_{0 \le i \le \ell} (-1)^i \binom{\ell}{i} i^k$$

k \ ℓ	0	1	2	3	4	5	6	7	8	9
0	1									
1	0	1								
2	0	1	1							
3	0	2	3	1						
4	0	6	11	6	1					
5	0	24	50	35	10	1				
6	0	120	274	225	85	15	1			
7	0	720	1764	1624	735	175	21	1		
8	0	5040	13068	13132	6769	1960	322	28	1	
9	0	40320	109584	118124	67284	22449	4536	546	36	1

Valores de $\left[{k \atop \ell} \right]$

k \ ℓ	0	1	2	3	4	5	6	7	8	9
0	1									
1	0	1								
2	0	1	1							
3	0	1	3	1						
4	0	1	7	6	1					
5	0	1	15	25	10	1				
6	0	1	31	90	65	15	1			
7	0	1	63	301	350	140	21	1		
8	0	1	127	966	1701	1050	266	28	1	
9	0	1	255	3025	7770	6951	2646	462	36	1

Valores de $\left\{ {k \atop \ell} \right\}$