

$$(a+b)^m = \sum_{k=0}^m \binom{m}{k} a^k b^{m-k} \Rightarrow (a+b)(a+b)^m = \sum_{k=0}^{m+1} \binom{m+1}{k} a^k b^{m+1-k}$$

$$(a+b) \sum_{k=0}^m \binom{m}{k} a^k b^{m-k} =$$

$$= \sum_{k=0}^m \binom{m}{k} a^{k+1} b^{m-k} + \sum_{k=0}^m \binom{m}{k} a^k b^{m-k+1} =$$

$$= a^{m+1} + \sum_{k=0}^{m-1} \binom{m}{k} a^{k+1} b^{m-k} + b^{m+1} + \sum_{k=1}^m \binom{m}{k} a^k b^{m-k+1} =$$

$$= a^{m+1} + \sum_{k=1}^m \binom{m}{k-1} a^k b^{m-k+1} + b^{m+1} + \sum_{k=1}^m \binom{m}{k} a^k b^{m-k+1} =$$

$$= a^{m+1} + b^{m+1} + \sum_{k=1}^m [\binom{m}{k-1} + \binom{m}{k}] a^k b^{m-k+1} =$$

$$= a^{m+1} + b^{m+1} + \sum_{k=1}^m \binom{m+1}{k} a^k b^{m-k+1} =$$

$$= b^{m+1} + \sum_{k=1}^{m+1} \binom{m+1}{k} a^k b^{m-k+1} =$$

$$= \sum_{k=0}^{m+1} \binom{m+1}{k} a^k b^{m-k+1}$$

BINOMIO
DI NEWTON

$$k = k-1$$

$$m - (k-1)$$

$$\binom{m+1}{k} = \binom{m}{k} + \binom{m}{k-1}$$

$$\begin{matrix} 1 \\ 1 & 2 & 1 \\ 1 & 3 & 3 & 1 \end{matrix}$$