c) Zaczynamy od ciągu $\langle 1, 1, 1, 1, \dots \rangle$

$$\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n$$

Przesuwamy o k pozycji

$$\frac{x^k}{1-x} \sum_{n=0}^{\infty} x^{n+k} \quad /()'$$

$$\frac{k!\left(\frac{1}{1-x}\right)^k}{1-x} = \sum_{m=0}^{\infty} (n+k)(n+k+1)\dots(n+1)\, x^n \quad / : k!$$

$$\frac{1}{(1-x)^{k+1}} = \sum_{n=0}^{\infty} \frac{(n+k)(n+k+1)\dots(n+1) \cdot n!}{k! \cdot n!} x^n$$

$$\frac{1}{(1-x)^{k+1}} = \sum_{n=0}^{\infty} \left(\frac{(n+k)!}{n!\,k!}\right) x^n$$

$$\| $$

$$\binom{n+k}{k}$$