

Kombinatorika

Binomická věta a Pascalův trojúhelník

Binomická věta zní:

$$\begin{aligned}(a + b)^n &= \\ &= \binom{n}{0} a^n + \binom{n}{1} a^{n-1}b + \binom{n}{2} a^{n-2}b^2 + \dots + \binom{n}{n-2} a^2b^{n-2} + \binom{n}{n-1} a^1b^{n-1} + \binom{n}{n} b^n = \\ &= \sum_{k=0}^n \binom{n}{k} a^{n-k}b^k\end{aligned}$$

Pascalův trojúhelník vypadá následovně:

$n = 0$	$\binom{0}{0}$	1
$n = 1$	$\binom{1}{0} \binom{1}{1}$	1 1
$n = 2$	$\binom{2}{0} \binom{2}{1} \binom{2}{2}$	1 2 1
$n = 3$	$\binom{3}{0} \binom{3}{1} \binom{3}{2} \binom{3}{3}$	1 3 3 1
$n = 4$	$\binom{4}{0} \binom{4}{1} \binom{4}{2} \binom{4}{3} \binom{4}{4}$	1 4 6 4 1
$n = 5$	$\binom{5}{0} \binom{5}{1} \binom{5}{2} \binom{5}{3} \binom{5}{4} \binom{5}{5}$	1 5 10 10 5 1