

Aufgabe 13

$$\boxed{\binom{a}{b} = \frac{a!}{b!(a-b)!}}$$

a) z.z. $\binom{n}{0} = 1$

$$\binom{n}{0} = \frac{n!}{0!(n-0)!} = \frac{\cancel{n!}}{\cancel{n!}} = \underline{\underline{1}}$$

b) z.z.: $\binom{n}{n} = 1$

$$\binom{n}{n} = \frac{n!}{n!(n-n)!} = \frac{n!}{n! \cdot 0!} = \frac{\cancel{n!}}{\cancel{n!}} = \underline{\underline{1}}$$

c) z.z. $\binom{n}{k} = \binom{n}{n-k}$ setze $a =$

linke Seite: $\frac{n!}{k!(n-k)!}$

rechte Seite: setze $a = n$, $b = n-k$.

$$\begin{aligned} \binom{n}{n-k} &= \frac{n!}{(n-k)!(n-(n-k))!} = \\ &= \frac{n!}{(n-k)! \cdot k!} \quad \text{also: l.S.} = \text{r.S.} \end{aligned}$$