$\ldots - (x+1)^2$ ↯ x^2+1

$$-(x^2+2x+1) = -x^2 + 2x + 1$$

$$1\cdot 1 + 2\cdot 2 + \ldots + n\cdot n! = (n+1)! - 1$$

$$\sum_{k=1}^{n} k\cdot k! = (n+1)! - 1$$

$$\frac{3}{4}\, a_{n+1} = -\frac{1}{2}\cdot\left(-0{,}5\, a_n + 15\right)$$

Relation: 2 Mengen in Beziehung zueinander stellen

$$\neq \{ \mathbb{R} \times \mathbb{R} \mid x \geq y \}$$

↳ $\underbrace{\text{reflexiv, transitiv, antisymm.}}_{\text{Ordnungsrelation}}$

$(\mathbb{N}, +)$ $\quad$ $\mathbb{N} + \mathbb{N} \to \mathbb{N}$ $\quad$ binäre Operation

($a+b = b+a$ $\quad$ kommutativ)

abelsches Monoid

$a+(b+c) = (a+b)+c$ $\quad$ assoziativ

$a + 1 = a$ $\quad$ $1 = 0 \in \mathbb{N}$ $\quad$ neutrale Element

$a + \bar{a} = 1$ $\quad$ $\bar{a} = -a \notin \mathbb{N}$ $\quad$ inverse Element

$M = \{ 10^x ; x \in \mathbb{Q} \}$, $(M, \cdot)$

Sinn: ✓

$$\left.\begin{aligned} 10^x \cdot 10^y &= 10^z \\ 10^{x+y} &= 10^z \\ x+y &= z \end{aligned}\right\} \mathbb{Q}$$

assoziativ: ✓

$$\begin{aligned} 10^x \cdot (10^y \cdot 10^z) &= (10^x \cdot 10^y) \cdot 10^z \\ 10^{x+(y+z)} &= 10^{(x+y)+z} \\ 10^{x+y+z} &= 10^{x+y+z} \end{aligned}$$

kommutativ: ✓

$$\begin{aligned} 10^x \cdot 10^y &= 10^y \cdot 10^x \\ 10^{x+y} &= 10^{y+x} \\ x+y &= y+x \end{aligned}$$

neutral:

$$\left.\begin{aligned} 10^x \cdot 1 &= 10^x \\ 10^x \cdot 10^1 &= 10^x \\ 10^{x+1} &= 10^x \end{aligned}\right\} \quad 1 = 10^0 \in M$$

inverse:

$$\left.\begin{aligned} 10^x \cdot 10^{\bar{x}} &= 1 \\ 10^{x+\bar{x}} &= 10^0 \\ x+\bar{x} &= 0 \end{aligned}\right\} \quad \bar{x} = 10^{-x} \in M$$

$\Rightarrow$ abelsche Gruppe

$$a \odot x = b$$