

H6/2

i) L1: $P(x+y) \neq P(x) + P(y)$

Klar machen an einfachen Bsp. (x^2, \dots) ↘

L2: $P(\lambda x) \neq \lambda P(x)$ ↘

Klar machen am Bsp:

(i) L1: Sei $f, g \in \text{Abb}(\mathbb{R}, \mathbb{R})$

$$\hat{x}(f+g) = (f+g)(x) = f(x) + g(x) \quad \checkmark$$

L2: $\lambda \in \mathbb{R}$

$$\hat{x}(\lambda f) = (\lambda f)(x) = \lambda \cdot f(x) \quad \checkmark$$

(ii)

L1: $x, y \in \mathbb{R}^n$

$$t(x+y) = (x+y) + t \neq t(x) + t(y) = x+t + y+t = x+y+2t$$

L2: $\lambda \in \mathbb{R}$

$$t(\lambda x) = \lambda x + t \neq \lambda t(x) = \lambda x + \lambda t$$

(iii)

L1: $f, g \in \text{Abb}(\mathbb{R}, \mathbb{R})$

$$\begin{aligned} h(f+g)(x) &= (f+g)(x+h) = f(x+h) + g(x+h) \\ &= (h f)(x) + (h g)(x) \quad \checkmark \end{aligned}$$

L2: $\lambda \in \mathbb{R}$

$$h(\lambda f)(x) = \lambda f(x+h) = \lambda \cdot h(f)(x) \quad \checkmark$$