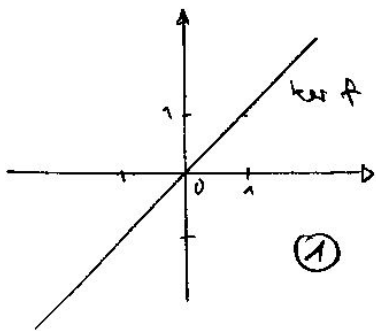
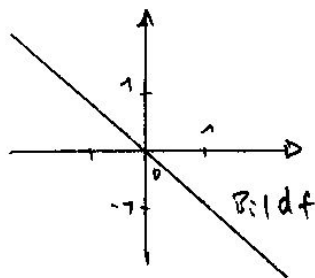


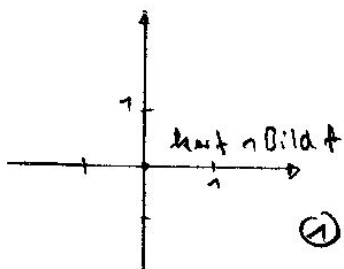
$$\begin{aligned} \ker f \cap \text{Bild } f &= \left\{ \lambda_1 \begin{pmatrix} 1 \\ 1 \end{pmatrix} : \lambda_1 \in \mathbb{R} \right\} \cup \left\{ \lambda_2 \begin{pmatrix} -1 \\ -1 \end{pmatrix} : \lambda_2 \in \mathbb{R} \right\} \\ &= \left\{ \lambda_1 \begin{pmatrix} 1 \\ 1 \end{pmatrix} + \lambda_2 \begin{pmatrix} -1 \\ -1 \end{pmatrix} : \lambda_1, \lambda_2 \in \mathbb{R} \right\} = \mathbb{R}^2 \quad \textcircled{1} \end{aligned}$$



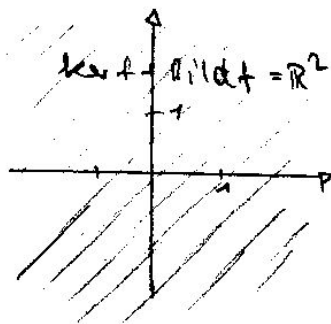
①



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①

1.9

$$\sum \lambda_i = 8$$

" \Rightarrow " Sei $\ker f \cap \text{Bild } f = \{0\}$

$$\text{z.z. } \ker(f \circ f) = \ker f$$

$$1.) \ker f \subseteq \ker(f \circ f) \quad \text{klar, (f(0) = 0!)}$$

$$2.) \text{ " } \ker(f \circ f) \subseteq \ker f \text{ "}$$

Sei $x \notin \ker f$.

$$\Rightarrow f(x) = y \neq 0, y \in \text{Bild } f.$$

$$\Rightarrow f(y) = f(f(x)) = f \circ f(x) \neq 0$$

$$\underbrace{\ker f \cap \text{Bild } f = \{0\}}$$

$$\Rightarrow x \notin \ker(f \circ f)$$

$$\Rightarrow \ker f \circ f \subseteq \ker f$$

③