

POZW. 8

$$\|f\| := \sup \{ |f(x)| ; \|x\| \leq 1 \}$$

$$\leadsto \text{placi: } \|f\| = \underbrace{\sup \{ |f(x)| ; \|x\| = 1 \}}_m$$

$$\Rightarrow m \leq \|f\| \quad \checkmark$$

$$\dots x \in X ; \|x\| \leq 1 ; x \neq 0 \quad \leadsto \quad \tilde{x} := \frac{x}{\|x\|} \quad \dots \|\tilde{x}\| = 1$$

$$\underbrace{|f(x)|} = |f(\tilde{x} \cdot \|x\|)| = \|x\| \cdot |f(\tilde{x})| =$$

$$= \underbrace{\|x\|}_{\leq 1} \cdot |f(\tilde{x})| \leq \underbrace{|f(\tilde{x})|}$$

$$\Rightarrow \underline{m \geq \|f\|}$$

$$\leadsto \underline{\underline{m = \|f\|}}$$