

Proof

▶ Big idea: let $\varphi \in (V_1 \times \dots \times V_m)'$
 $= \mathcal{L}(V_1 \times \dots \times V_m, \mathbb{F})$

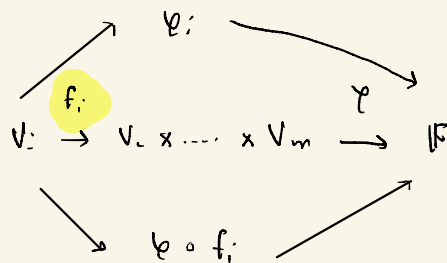
$$V_1 \times \dots \times V_m \xrightarrow{\varphi} \mathbb{F}$$

▶ We are interested to see how φ can correspond to

$$\varphi_i \in V_i' = \mathcal{L}(V_i, \mathbb{F}), \quad V_i \xrightarrow{\varphi_i} \mathbb{F}$$

for each V_1, \dots, V_m

▶ Thus for each V_1, \dots, V_m , if we can find
a linear mapping f_i such that $f_i: V_i \rightarrow V_1 \times \dots \times V_m$,



we can make the
linkage between
 $\mathcal{L}(V_i, \mathbb{F})$ and
 $\mathcal{L}(V_1, \dots, V_m, \mathbb{F})$