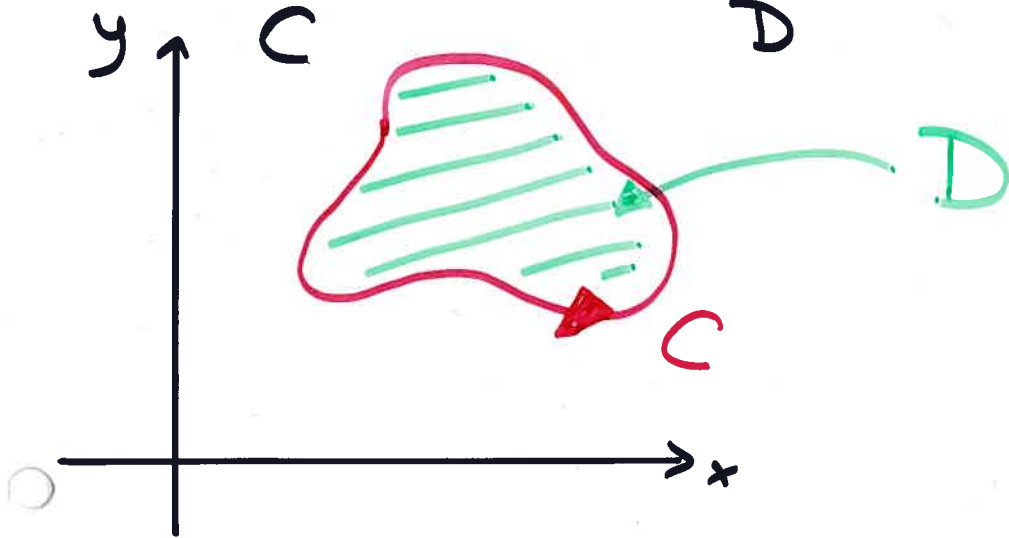


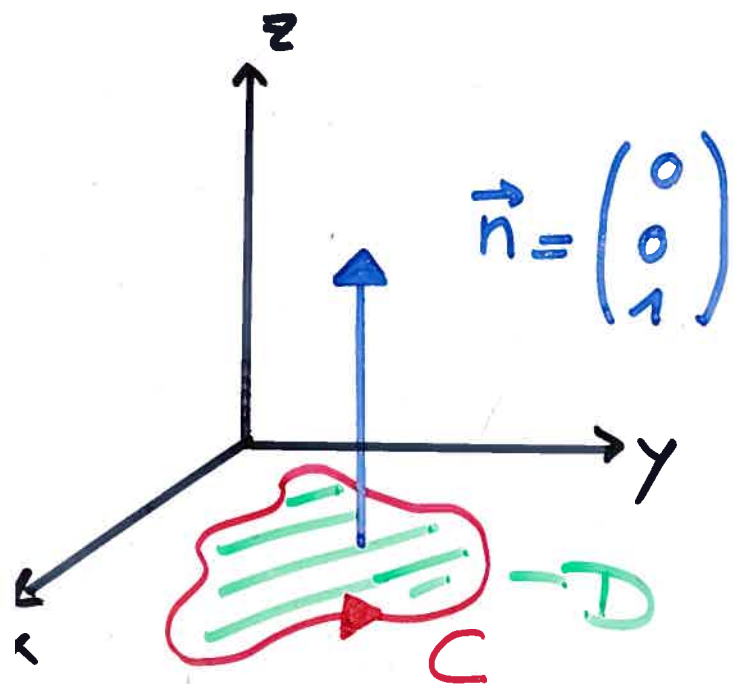
# Satz v. Green

$$\oint_C \vec{F} \cdot d\vec{r} = \iint_D \frac{\partial F_2}{\partial x} - \frac{\partial F_1}{\partial y} dA \quad (*)$$



$$\vec{F}(x, y) = \begin{pmatrix} F_1(x, y) \\ F_2(x, y) \end{pmatrix} \rightsquigarrow \vec{F}(x, y, z) = \begin{pmatrix} F_1(x, y) \\ F_2(x, y) \\ 0 \end{pmatrix}$$

$$\rightarrow \text{rot } \vec{F} = \begin{pmatrix} 0 \\ 0 \\ \frac{\partial F_2}{\partial x} - \frac{\partial F_1}{\partial y} \end{pmatrix}$$



$$(*) = \iint_D \text{rot } \vec{F} \cdot \vec{n} dA$$