Stokes

$$\left[\oint_C \bar{F} \cdot d\bar{r} = \iint_\gamma \operatorname{curl} \bar{F} \cdot \hat{N} \, dS \right]$$

$dxdy$

- Om $\operatorname{curl} \bar{F} = 0$, $\bar{F}$ konservativ

Får ej användas om $\bar{F}$ är konservativ

ex)

$$\oint_c F$$

$$\iint_\gamma \operatorname{Curl}(\bar{F}) \cdot \hat{N} \, dS$$

$\bar{F} =$

$z = 0$

$$\text{Surface} = x^2 + y^2 + 4 = 8 \Rightarrow \begin{cases} x^2 + y^2 = 4 \\ z = 0 \end{cases}$$

c

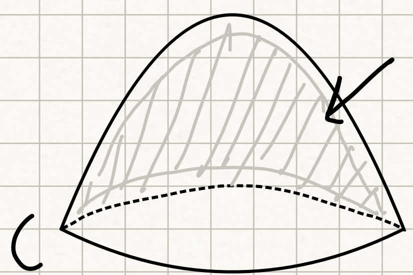
Hm 6.2

$$\operatorname{curl} [3x - y, yz, xy] =$$

$$\begin{bmatrix} \frac{\partial}{\partial x} \\ \frac{\partial}{\partial y} \\ \frac{\partial}{\partial z} \end{bmatrix} \times \begin{bmatrix} 3x-y \\ zy \\ xy \end{bmatrix} = \begin{bmatrix} x-y \\ -y \\ 1 \end{bmatrix}$$

$$\int_0^{2\pi}\int_0^{2} r\,dr\,d\theta \Rightarrow \int_0^{2\pi} \left[\frac{r^2}{2}\right]_0^2 d\theta = \int_0^{2\pi} 2\,d\theta = 4\pi$$

Repetition



γ sluten rand C

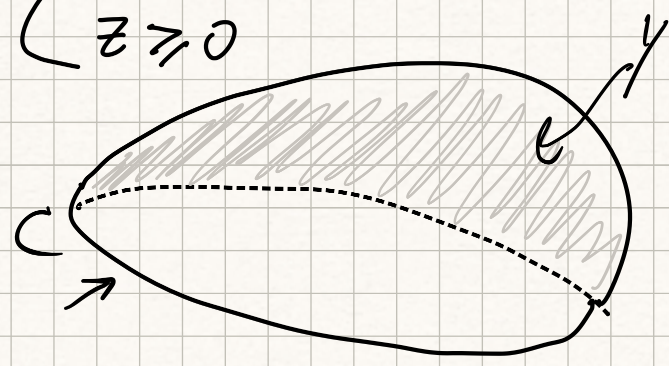
$$\oint_C F \cdot dr = \iint_\gamma \operatorname{curl}(\bar{F}) \cdot \bar{dS}$$

ex)

$$\iint_\gamma \operatorname{rot} \bar{F} \cdot \bar{dS}, \quad \bar{F} = (3y, -2xz, x^2 - y^2)$$

$$\gamma \begin{cases} x^2 + y^2 + z^2 = a^2 \\ z \geq 0 \end{cases}$$

{dS pekar ut}



C är sluten rand

[illegible]