

Pelda : \mathbb{R}^3 -ban 2-dimenziós sokaságon integrál

→ Sokaság : $M = \{ (u, v, t(u, v)) : (u, v) \in D \}$

→ Diff forma $\omega = f dx dy$

$$\int_M \omega = \iint_D \underbrace{\quad}_{(?) } d(u, v)$$

Paraméterezés : $\phi : \mathbb{R}^2 \rightarrow \mathbb{R}^3$
 $\phi(u, v) = \begin{pmatrix} u \\ v \\ t(u, v) \end{pmatrix} \quad (u, v) \in D$

→ Jacobi mátrixa $D\phi = \begin{pmatrix} 1 & 0 \\ 0 & 1 \\ t'_u & t'_v \end{pmatrix}$

$$\omega(D\phi) = dx dy (D\phi) = \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} = 1$$

$$\int_M \omega = \iint_D f(u, v, t(u, v)) du dv$$