

Ex 3.

$$\int_{\gamma} \langle \vec{F}, d\vec{A}' \rangle, \quad d\vec{A}' = \frac{N(\varphi(x))}{\| \underbrace{t_1 \times t_2}_{\|t_1 \times t_2\|} \|} \cdot \sqrt{g(x)} \, dx.$$

$$\Rightarrow d\vec{A}' = t_1(\varphi(x)) \times t_2(\varphi(x)) \, dx_1 \, dx_2$$

Ex 9.

$$\int_R \langle \nabla u, \nabla v \rangle dx = - \int_R u \cdot \Delta v dx + \int_{\partial R^*} u \frac{\partial v}{\partial n} dA$$