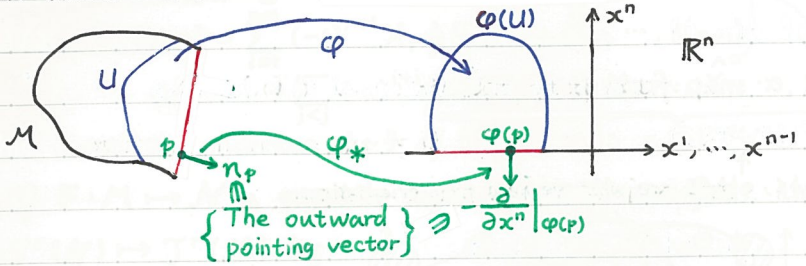
Propositions

1) The boundary of a smooth manifold M of dim n is a smooth manifold ∂M of dim $(n-1)$.

2) If M is orientable then ∂M is also orientable.
More precisely, if an orientation is chosen on M, then there exists an INDUCED ORIENTATION on ∂M.



We set $\varphi_*^{-1}\left(-\frac{\partial}{\partial x^n}\Big|_{\varphi(p)}\right) =: n_p$

For a basis on ∂M, we choose a basis $\{e_1, \cdots, e_{n-1}\}$ of $T_p(\partial M)$ such that $\{n_p, e_1, \cdots, e_{n-1}\}$ generates a basis of $T_p(M)$ of the same orientation as on M.