Details of proofs for several results on differential forms

The attached pages from the Third Edition of Rudin, *__Principles of Mathematical Analysis__* (pp. 262 – 280), contain proofs or examples for the following, which are either in the main notes or closely related to them:

1. __Theorem V.△.6__ on change of variables for differential forms.

2. An example of a closed 2–form on $\mathbb{R}^2 - \{0\}$ which is not exact (this corresponds to a vector field $\mathbf{F}$ such the divergence of $\mathbf{F}$ is zero but $\mathbf{F}$ is not the curl of some vector field on the given open set (see Example 10.37 on page 277 of Rudin, which is page 17 of this document).

3. __Proposition V.△.1__ on the change of variables rule for integrating differential forms over smooth singular chains ("with respect to the bilinear map defined by taking integrals, the pullback for differential forms associated to a smooth function f is adjoint to the induced map for smooth singular chains").

4. __Theorem V.△.2__, which is the general version of Stokes' Theorem for integrals of differential forms over smooth singular chains ("with respect to the bilinear map defined by taking integrals, the exterior derivative for differential forms is adjoint to the boundary map for smooth singular chains").