Category Theory
Homework Assignment VII

For everyone: Read 4.5 of Riehl and 4.4-4.6 of Mac Lane.

For Ari, Gregory, Orlando, and Wei: Present the problems below on November 1.

PROBLEMS

1. Let $\mathcal{H}$ and $\mathcal{K}$ be groups considered as 1-object categories. Assume that $G\colon \mathcal{H} \to \mathcal{K}$ is a functor that has a left adjoint.

(a) Must $\mathcal{H}$ and $\mathcal{K}$ be equivalent categories?

(b) If your answer to (a) is Yes, then must G be part of an adjoint equivalence between $\mathcal{H}$ and $\mathcal{K}$?

2. Exercise 4.6.2 of Mac Lane. (Include the relevant definitions!)

3. Exercise 4.5.v of Riehl.

4. Exercise 4.6.ii of Riehl. (First sentence only.)