Module 7 : Relative homology, exicism and the Jordan Brouwer separation theorem Lecture 40 : Inductive limits

## **Exercises:**

- 1. Prove lemma (40.1)
- 2. Show that the Prüfer group (40.3) is the inductive limit of the sequence of multiplicative cyclic groups  $C_{p^k}$  of order  $p^k$ , where p is a prime number.
- 3. Discuss the existence of inductive limits of directed systems in the categories Gr and Top.
- Suppose that {G<sub>α</sub>/α ∈ Λ} is a directed system of groups with inductive limit G and associated maps f<sub>α</sub>: G<sub>α</sub> → G, show that G is the set theoretic union of the images f<sub>α</sub>(G<sub>α</sub>), α ∈ Λ.