April 28, 2006
Introduction to Compact Groups

An abelian group G is said to be *divisible* iff $(\forall g \in G)(\forall n \in \mathbb{N})(\exists x \in G)\, n{\cdot}x = g$. An abelian group G is said to be injective if for each pair of abelian group $A \subseteq B$ and each morphism $\phi: A \to G$ there is a morphism $\Phi: B \to G$ such that $\Phi|A = \phi$.

Theorem. *An abelian group G is divisible if and only if it is injective.*

Every abelian group is contained in a divisible one. If a subgroup of an abelian group is divisible, then it is a direct summand.

All rational vector group are divisible, all Prüfer groups are divisible. Quotients of divisible groups are divisible.

Corollary. *On an abelian group A the characters, i.e. the elements of $\widehat{A}$ separate the points.*

Program for today.

Characters of compact groups. Biduals Calculation of $\widehat{T}$ Exercise session.