ABSTRACT ALGEBRA, MATH 520
HOMEWORK 8

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(1) Find up to isomorphism all abelian groups of order 200.
(2) Find up to isomorphism all abelian groups of order 324.
(3) Suppose F is a free abelian group on n generators $x_1, x_2, \ldots, x_n$. Suppose that $S = \{x_1, \ldots, x_n\}$ and let $\mathcal{A}(S, A)$ be the mappings as sets of S into another abelian group A. Let $\hom(F, A)$ be the homomorphisms from F to A. The universal property says that in a natural way $\mathcal{A}(S, A) \cong \hom(F, A)$. We attempt to define a dual notion by declaring: an abelian group is *fascist* on a subset S of G if for every abelian group A, any set mapping in $\mathcal{A}(A, S)$ coincides with a unique homomorphism in $\hom(A, G)$. Prove there are no non-trivial fascist groups.
(4) Problem 5.2 18 in Dummit and Foote.
(5) Problem 5.3 4 in Dummit and Foote.
(6) Problem 5.3 14 in Dummit and Foote.