Adv Abstract Algebra: AAA #HW03

Due on 2022 at 11:59PM

Prof. Peter Hermann Spr 2022

Xianzhi

2023

Homework set 3

Problem 1

Suppose that a group G has order 312. Prove that G has a proper normal subgroup.

Solution:

Problem 2

Suppose that a group G has order 1960. Prove that G has a proper normal subgroup.

Solution:

Problem 3

For $A \leq G$, $|G : A|$ finite and A abelian, let $\tau_{G \mapsto A}$ denote the transfer homomorphism from G to A. Let $g \in G$ and $b \in N_G(A)$. Show that $\tau_{G \mapsto A}(g)$ commutes with b.
Hint: If $h_1, \ldots, h_n$ is a set of right coset representatives of A then show that $bh_1, \ldots, bh_n$ is also a set of right coset representatives of A.