Math 6130: Homework 4

1. 2.5: 12, 13, 14
2. 3.1: 11, 19, 22, 36, 41
3. 3.2: 4, 9, 18
4. Suppose $N \subseteq G$ is a nontrivial abelian subgroup, minimal with the property that it is normal in G (in particular $N \triangleleft G$). Let $H \subseteq G$ be a proper subgroup such that $NH = G$. Show that $N \cap H = 1$ and H is a maximal subgroup of G.