ABSTRACT ALGEBRA, MATH 520
WEEK 9 SUPPLEMENTAL HOMEWORK

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(1) Determine all abelian groups of order 3600 up to isomorphism. For each group give the decomposition into Sylow p-subgroups for p dividing 3600 and the invariant factor decomposition (i.e. $\mathbb{Z}_{d_1} \times \cdots \times \mathbb{Z}_{d_r}$ where d_i divides d_{i+1} for all $1 \leq i \leq r-1$.
(2) If H is the subgroup of $F(3)$ generated by $x_1+3x_2+12x_3, 15x_1+24x_3, 6x_2+6x_3$, determine the invariant factor representation of $F(3)/H$.
(3) If H is the subgroup of $F(5)$ generated by $4x_1+8x_3+12x_4, 18x_2+20x_5, 6x_1+10x_4+16x_5$, determine the invariant factor representation of $F(5)/H$.