

HOMEWORK 5

Due Wednesday July 1

- (1) Let G be a group of order $2^n \cdot 3$, $n \geq 2$. Show that G has a normal non-trivial 2-subgroup (that is a subgroup whose order is 2^α for $\alpha > 0$).
- (2) Find a 2-Sylow subgroup of S_4 and S_8 .
- (3) Show there are no simple groups of order 72.
- (4) Prove that if G is a group of order 1365, then G is not simple.
- (5) Prove that if G is a group of order 132, then G is not simple.