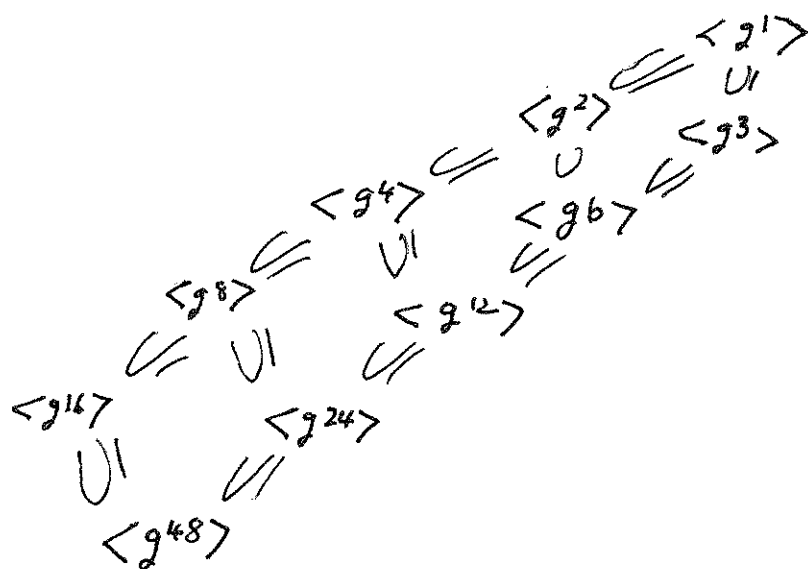Problem 6   Fall 2011   Math 546   Exam 3

Let G be a cyclic group of order 48 with $G = \langle g \rangle$.
Draw the lattice of subgroups of G

$$\langle g^{16} \rangle \quad \langle g^8 \rangle \quad \langle g^4 \rangle \quad \langle g^2 \rangle \quad \langle g^1 \rangle$$
$$\langle g^{48} \rangle \quad \langle g^{24} \rangle \quad \langle g^{12} \rangle \quad \langle g^6 \rangle \quad \langle g^3 \rangle$$

The lattice of factors of 48 gives the same information as the lattice of subgroups of G because there is a one-to-one correspondence between the factors of 48 and the subgroups of G. If ℓ is a factor of 48, the the subgroup of G of order ℓ is $\langle g^{\frac{48}{\ell}} \rangle$.