Math 74, Week 12

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1 Mon Lec, 5

1.1 a

$|K| = 6$, let e be the identity transformation and r be a rotation of $\frac{360}{6} = 60°$. The other elements are: r^2, r^3, r^4, r^5

1.2 b

Since D_6 is the group of all symmetries, K is only the rotational ones, and D_6 also contains reflective symmetries. Therefore K is a subgroup of D_6

1.3 c

Let our generator $\omega = r$, $\omega^0 = e, \omega^1 = r, \omega^2 = r^2$, and so on. It is a generator because its powers can generate all the elements of our gorup.

1.4 d

Let our generator $\omega = r^5$, $\omega^0 = e, \omega^1 = r^5, \omega^2 = r^4, \omega^3 = r^3$ etc.