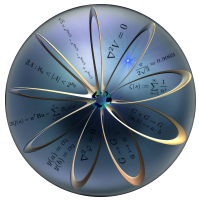

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subgroups of finite cyclic group

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Let n be the order of a finite cyclic group G. For every positive http://planetmath.org/Divisi
m of n, there exists one and only one subgroup of order m of G. The group G has no other subgroups.

Proof. If g is a generator of G and $n = mk$, then g^k generates the subgroup $\langle g^k \rangle$, the order of which is equal to the order of g^k, i.e. equal to m. Any subgroup H of G is cyclic (see http://planetmath.org/node/4097this entry). If $|H| = m$, then H must have a generator of order m; thus apparently $H = \langle g^{\pm k} \rangle = \langle g^k \rangle$.