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Schreier index formula

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Let F be a free group of finite rank, and let H be a <http://planetmath.org/Subgroup> of finite index in F . By the Nielsen-Schreier theorem, H is free. The *Schreier index formula* states that

$$\text{rank}(H) = |F : H| \cdot (\text{rank}(F) - 1) + 1.$$

This implies more generally that if G is a group generated by m elements, then any subgroup of index n in G can be generated by at most $nm - n + 1$ elements.