**Theorem 1** *Let $G$ be a non-abelian torsion group and $K$ be a field. If a group ring $K[G]$ is reversible, then $G$ is hamiltonian.*

**Proof.** Assume that $x \in G \backslash \{1\}$, and let $n$ denote the order of $x$.

Then, for all $y \in G$ we have $y(1-x)\left(1+x+\cdots+x^{n-1}\right)=0$.

Since $K[G]$ is reversible, $\left(1+x+\cdots+x^{n-1}\right)\left(1-yxy^{-1}\right)=0$.

Now, since $\left\{1, x, \ldots, x^{n-1}\right\}$ is a set of $n$ pairwise distinct elements of $G$,

it follows that $\left\{1, x, \ldots, x^{n-1}\right\}=\left\{1, x, \ldots, x^{n-1}\right\} yxy^{-1}$,

and consequently, $yxy^{-1}$ is in the group generated by $x$.

Hence this group is a normal subgroup of $G$.

Since this holds for every $x$, $G$ is hamiltonian. ■