Problem 77: Suppose that $G$ is a group and $x \in G$. Prove that $x^n = e$ if and only if $n$ is divisible by the order of $x$.

Problem 78: Let $G$ be a group and suppose $g \in G$ with $|g| = \infty$. Show that all distinct powers of $g$ are distinct group elements in $G$. (This was the first part of a theorem stated in class.)

Problem 79: It can be shown that $U(27) = \langle 2 \rangle$. Without computing $\langle x \rangle$ for every $x \in U(27)$, find all generators of $U(27)$. 