3.17 Theorem. Let n be a natural number. Any set, $\{a_1, a_2, ..., a_n\}$, of n integers for which no two are congruent modulo n is a complete residue system.

Proof. Let the set $S = \{a_1, a_2, ..., a_n\}$ of n integers for which no two or more are congruent modulo n be given. This implies that when each of the elements are divided by n, there will be distinct remainders. More specifically, there will be n distinct remainders. Thus, fulfilling the CRS definition. Suppose there are elements from the CCRS that did not map to the one or more elements of S. By the Pigeonhole principle, this means that one of the elements from the CCRS maps to two or more elements in S, which is a contradiction. Thus, given a set of integers for which no two are congruent modulo n is a complete residue system. $\square$