**Homework 5**

**Instructions:** Do as many of the problems as you like, but make sure to complete at least **three**. Then I will create a solution from your work.

1. Find an example of numbers *a, b* and *n* such that but
2. Suppose that where Show that if and only if and
3. Find a complete residue system modulo 5 composed entirely of multiples of 9.
4. Show that a perfect square must have one of 0, 1, 4, 5, 6, or 9 for its units digit.
5. Show that any *n* consecutive integers form a complete residue system modulo *n*.
6. Show that is not a complete residue system modulo *m* if
7. Prove that 17 does not divide for any *n.*