# Assignment 9, due March 25

## Problem 1

Let $p$ be an odd prime number. How many distinct solutions, $\bmod p$, does the equation

$$x^4 \equiv 1 (\bmod p)$$

have?

## Problem 2

Find all odd prime $p$ for which $\left(\frac{6}{p}\right) = 1$.

## Problem 3

Find all odd prime $p$ for which $\left(\frac{(p-1)/2}{p}\right) = 1$.

## Problem 4

Find all prime $p$ with $p \equiv 1 (\bmod 3)$ and $\left(\frac{(p-1)/3}{p}\right) = 1$.

## Problem 5

Let $p$ be an odd prime. Show that for any $n$ with $\gcd(n, p) = 1$ one can find unique odd $0 < k < p$ such that $n \equiv \pm k (\bmod p)$.