

Homework 20, due October 21

- (1) Use the Legendre symbol to determine whether 123 is a square  $\pmod{401}$ . Note that 401 is prime.
- (2) Evaluate the Jacobi symbol

$$\left(\frac{24601}{365235}\right),$$

showing each step, and explain what the answer means.

- (3) For the numbers  $n = 1, 5, 7, 11$ , do the following: Suppose that  $p$  is a prime congruent to  $n \pmod{12}$ , and determine whether 3 is a square modulo  $p$ .