Collected Problems:

1. For each of the following compute the value of the Legendre symbol using (a)Euler's criterion (b)Gauss's Lemma: (c) Eisenstein's Lemma (do not use gp or a similar calculator, show work.) You did a and b on Tuesday's homework.

   (a) $\left(\dfrac{2}{29}\right)$

   (b) $\left(\dfrac{3}{11}\right)$

   (c) $\left(\dfrac{13}{17}\right)$

2. Calculate: (in each both the numerator and the denominator are prime)

   (a) $\left(\dfrac{1234439}{17827}\right)$

   (b) $\left(\dfrac{121234433}{917804249}\right)$

3. Let $a = 10342878904128079$ and $p = 1234103491243871023341890123782878904128067$ (both are prime). Remember if you are doing this problem when you are suppose to, you don't know about Jacobi symbols!

   (a) Use quadratic reciprocity and gp and the functions Mod() and factor() to calculate: $\left(\dfrac{a}{p}\right)$.

   (b) Use Euler's criterion and gp to calculate $\left(\dfrac{a}{p}\right)$.