1. Compute $\left(\frac{x^2-1}{x^3+2x+1}\right)_2$

   [Hint: In class we have solved $(x^2-1)^2$.
   Find $(x^2-1)^4, (x^2-1)^8$.
   Then you get $(x^2-1)(x^2-1)^4(x^2-1)^8 = (x^2-1)^{13}$]

2. Compute $\left(\frac{x+1}{x^3+2x+1}\right)_2$ using the reciprocity law.

3. Given a prime polynomal P check when $\left(\frac{a}{P}\right)_2 = 1$, if $a = x$

   In $\mathbb{F}_7[x]$

   In $\mathbb{F}_{13}[x]$

4. Over $\mathbb{F}_5[x]$, let P be a monic irreducible polynomial (prime). Prove that $(x^2-1) \equiv y^2 \bmod(p)$ is solvable for P such that $P(\pm 1) \neq 0$ iff $P(1)P(-1) = \pm 1$