

$$\Leftrightarrow 3^{\frac{F_n-1}{2}} \equiv -1 \pmod{F_n} .$$

28. The primes  $p$  for which  $x^2 \equiv 13 \pmod{p}$  has solutions consists precisely of those primes lying in certain congruence classes mod 13 ; which ones?

[Hint: if you think of the classes as being represented by  $-6, \dots, 0, \dots, 6$  then you can recycle a lot of your work....]

29. [NZM, p. 148, # 3.3.15] Show that if  $p \geq 7$  is an odd prime, then  $\left(\frac{n}{p}\right) = \left(\frac{n+1}{p}\right)$  for at least one of  $n = 2, 4, 5$ , or 8.

[Hint: it might help to express this in terms of  $\left(\frac{n}{p}\right)\left(\frac{n+1}{p}\right)$

30. Compute  $\left(\frac{35}{149}\right)$  ,  $\left(\frac{39}{145}\right)$  , and  $\left(\frac{280}{351}\right)$  .