Math 453: Homework # 2

Due Friday, 14 September 2018 in class

In writing your proofs, fully explain all the important steps. Use full and grammatically
correct English sentences. Be clear and concise.

Exercise numbers are from the end-of-section exercise sets in the 2002 reissue of Elementary
Number Theory by James K. Strayer.

1. (5 points) Exercise Set 1.3, # 45 (Hint: one way is to use # 44 (a) )

2. (5 points) Let $a_1, a_2, a_3, \ldots$ be the sequence of Fibonacci numbers, defined by
   $a_1 = a_2 = 1$ and
   $$a_n = a_{n-1} + a_{n-2}, \quad n \geq 3.$$

   Prove that $a_k$ and $a_{k+1}$ are relatively prime for every $k \geq 1$.

3. (5 points) Exercise Set 1.5, # 71

4. (5 points) Exercise Set 1.5, # 76 (a) (There is a hint after Appendix E of the book.)

5. (5 points) Exercise Set 1.5, # 87 (a) and (b)