

Math 453: Homework # 2

Due Friday, 1 February 2019 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, \dots 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)**