MATH 113: DISCRETE STRUCTURES
HOMEWORK DUE FRIDAY WEEK 13

Problem 1. Show that the Euclidean algorithm can terminate in two steps for arbitrarily large positive integers with greatest common divisor 1.

Problem 2. Suppose $a < b$ and the Euclidean algorithm applied to a and b takes k steps. Prove that $a \geq F_{k+1}$ and $b \geq F_{k+2}$.

Problem 3. Use the Euclidean algorithm to compute the $\gcd$ of 198 and 168 and find integers m and n such that

$$\gcd(198, 168) = 198m + 168n.$$

(You should use the procedure described on p.104.)