

Discrete Mathematics I
Assignment 5 (November 30, 2005)

(This assignment is due on December 07, 2005, 1.00 p.m., by dropping it into the wooden box in front of F 310)

Exercise 1 (Sieve of Eratosthenes and Euclidean algorithm):

- a) Use the Sieve of Eratosthenes to determine $\pi(200) - \pi(100)$.
- b) Determine $\gcd(1897, 1463)$ using the Euclidean algorithm.

(15+15 Points)

Exercise 2 (Fermat numbers):

The numbers $F_k = 2^{2^k} + 1$, $k = 1, 2, 3, \dots$, are called Fermat numbers.

- a) Prove that $F_n = F_0 \cdot F_1 \cdot F_2 \cdot \dots \cdot F_{n-1} + 2$.
- b) Prove that the Fermat numbers are pairwise relatively prime.
(Hint: Use part a).)

(10+20 Points)