# NUMBER THEORY: HOMEWORK 5

Homework due on Friday October 17.

## 1. Problems

1) Show that the converse of Wilson's theorem:
If $(n-1)! + 1 \equiv 0 \pmod{n}$ then $n$ is prime if $n > 1$.

2) Use the Pollard rho method to factor the Fermat number

$$F(n) = 2^{2^n} + 1 \ , \ n = 5, 6, 7, 8, 9, 10.$$

Compare the speed of your program with the build in command $ifactor(n)$ in Maple. You can download the code for Maple program from my web site.

Also do the following problems in the book:

Problem 12, 22, 23 page 221.

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*Date*: Friday, October 10, 2008.