

Homework 2

Theory of Numbers (Fall 2014)
Rutgers University
Swastik Kopparty

Due Date: Monday, September 29, 2014

Questions

1. List all the factors of $2^2 \cdot 3^4$.
2. Compute the GCD of 220364 and 75116 using Euclid's algorithm. Show your work!
3. Show that if m and n are relatively prime integers, then their product is a perfect square if and only if both m and n are perfect squares.
BONUS: Find all k for which $1 + 2 + 3 + \dots + k$ is a perfect square.
4. Show that for all natural numbers n , the number of distinct primes that divide n is at most $\log_2 n$.