Algebraic number theory

Test 1

February 20, 2012

You can use any results from lectures without proof.

1. Let p be a prime number. Let R be the ring whose elements are rational numbers with denominators not divisible by p. Prove that R is integrally closed.

2. Find the prime ideals of the ring of integers of $\mathbb{Q}(\sqrt{-15})$ that contain 2.

3. Find all square free integers d such that exactly two primes are ramified in $\mathbb{Q}(\sqrt{d})$.