

Name _____ Fields and Rings, Quiz 1

1) Use the Euclidean Algorithm to find the greatest common divisor of 46 and 11.

2) Use your work from the previous problem to solve the equation below.

$$46x + 11y = 3$$

3) Use the Euclidean Algorithm to find a greatest common divisor in $\mathbb{Q}[x]$ of $x^3 + x$ and $x^2 - 2$.

4) The set of all positive square numbers is $\{1, 4, 9, 16, 25, 36, 49, 64, \dots\}$. Prove that every number in this set is congruent to either 0 or 1 mod 4.