

Name _____ Quiz 2, Fields and Rings

1) Use the Euclidean Algorithm to find a gcd of $x^4 + x^2 + 2$ and $x^2 + 2$. (50 points)

2) Modular arithmetic, defined below, is well defined. What does this mean? (50 points)

$$[a]_m + [b]_m := [a + b]_m$$

3) Let f and g be polynomials with rational coefficients. State a formula for $\deg(fg)$, and then prove it. (100 points)