CS 235: Algebraic Algorithms, Spring 2021

Discussion 9 Tuesday, April 20th, 2021.

Problem 1. Integral Domain. If $x \in R$, an integral domain, and $x^2 = 1$. Show that x = 1 or x = -1.

Problem 2. Ring Homomorphism and Isomorphism.

(a) Find a ring homomorphism from the ring R[x, y] to R[y].

(b) Use the ring homomorphism that you found in the previous question to show the following isomorphism: $R[x, y]/(x) \cong R[y]$, where (x) is the principal ideal of R[x, y] generated by $x \in R$.

(continue)