

Chapter 17 Exercises

Gallian's Book on Abstract Algebra

Spencer T. Parkin

March 19, 2014

Understanding Example 10

Let F be a field and let $p(x) \in F[x]$ be an irreducible polynomial. Show that for any $f(x) \in F[x]$, that there exists a polynomial $g(x) \in F[x]$ with $\deg g(x) < \deg p(x)$ such that

$$f(x) + \langle p(x) \rangle = g(x) + \langle p(x) \rangle$$

in the field $F[x]/\langle p(x) \rangle$.