

Homework 8

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1. (a) Since $(x^7 + 25x^6 - 25x + 5)$ is a nonconstant polynomial in \mathbb{Q} , $\mathbb{Q}/(x^7 + 25x^6 - 25x + 5)$ is a field if and only if $(x^7 + 25x^6 - 25x + 5)$ is irreducible in \mathbb{Q} . We know that $(x^7 + 25x^6 - 25x + 5)$ is irreducible in \mathbb{Q} by Eisenstein's Criterion for prime 5. Thus, $\mathbb{Q}/(x^7 + 25x^6 - 25x + 5)$ is a field.
(b) TODO
(c) TODO
2. TODO