Math 395

Homework 6
Due: 3/28/2024

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Collaborators:

Problem 5

We will show that x^3-2x-2 is irreducible over $\mathbb{Q}$, then compute $(1+\theta)(1+\theta+\theta^2)$ and $\frac{1+\theta}{1+\theta+\theta^2}$ in $\mathbb{Q}(\theta)$ for θ a root.

To start, we see that $x^3 - 2x - 2$ is a monic polynomial where $p = 2$, so by Eisenstein's criterion and Gauss's Lemma, $x^3 - 2x - 2$ is irreducible over $\mathbb{Q}$.