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## Assignment 10

Due date: Thursday, 28 November 2024, 23:59

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### Exercise 10.5, Extension Fields (★)

(8 Points)

Let  $F = \mathbb{Z}_3[x]_{x^3+2x^2+1}$ .

- a) Prove that  $F$  is a field.
- b) Find a generator of  $F^*$ . **Show your work.**
- c) Find all roots of  $a(y) = y^2 + 2y(x^2 + x) + (x^2 + 2)$  in  $F[y]$ . **Show your work.**

**a)**

asdf

**b)**

asdf

**c)**

asdf