

Exercise 7

- ** 1. Determine the irreducible polynomials of degrees 1,2 and 3 over \mathbb{F}_2 .
- *** 2. Determine the irreducible polynomials of degree 4 over \mathbb{F}_2 .
- *** 3. How many irreducible polynomials are there of degree 5 over \mathbb{F}_2 ?
- ** 4. Determine the irreducible polynomials of degree 2 over \mathbb{F}_3 .
- *** 5. Determine the irreducible polynomials of degree 3 over \mathbb{F}_3 .
- *** 6. How many irreducible polynomials are there of degree 4 over \mathbb{F}_3 ?
- ** 7. Determine the irreducible polynomials of degree 2 over \mathbb{F}_5 .
- ** 8. Determine the irreducible polynomials of degree 2 over \mathbb{F}_7 .
- ** 9. Show that an irreducible polynomial over \mathbb{R} is of degree 1 or 2.
- ** 10. Determine the irreducible polynomials over \mathbb{C} .
In exercises 11–20 determine if the given polynomial is irreducible over \mathbb{Q} .
- ** 11. $x^2 + x + 1$
- ** 12. $x^3 + 2x + 1$
- *** 13. $x^4 + 1$
- *** 14. $x^4 + 2$
- *** 15. $x^4 + 4$
- *** 16. $x^4 + 4x^3 + 1$
- ** 17. Determine the irreducible polynomials of degree 2 over \mathbb{F}_7 .