

## Algebra I – autumn 2024 – Homework 9

1. Decompose  $x^5 + x^4 - 5x^3 + 7x^2 + 10x - 44$  into irreducible factors over  $\mathbb{C}$ ,  $\mathbb{R}$ ,  $\mathbb{Q}$  and  $\mathbb{Z}$ , if one of its roots is  $\sqrt[3]{4} + \sqrt[3]{2} - 1$ .