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## Homework 9, Due Wed, Apr 15

This homework must be done individually. Remember to follow Math department's guidelines for homework. Please write your solutions neatly. Typesetting in LaTeX is appreciated and encouraged. **Always show your work and justify your answers.**

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1. Let  $\alpha = \sqrt{2} + i \in \mathbb{C}$ .
  - (a) Find the minimal polynomial of  $\alpha$  over  $\mathbb{Q}$ . Fully justify your answer.
  - (b) Find the minimal polynomial of  $\alpha$  over  $\mathbb{Q}(i)$ . Fully justify your answer.
2. Problem 30 on page 273 of the textbook.
3. Problem 36 on page 274 of the textbook.
4. Problem 37 on page 274 of the textbook.
5. Problem 23 on page 282 of the textbook.
6. Problem 26 on page 282 of the textbook.