Due Date: Thursday, March 30 at 11:59PM EST

Carefully read and provide solutions to the problems below, showing all work required to justify any conclusions you make. You are encouraged to collaborate with your classmates, but all solutions turned in should be your own work. If you do collaborate, please record the names of those other students on your submitted work. Finally, your work should be submitted as a PDF on Gradescope before the listed due date.

Textbook problems: 8.2, 17.5

Problem 1. (Lecture 10.1, Exercise 3) Find the roots of

$$f(x) = x^4 - 8x^2 + 15$$

using algebraic expressions of the coefficients of f (i.e. solve f by radicals).

Problem 2. (Lecture 10.2, Exercise 1) Let K/F be a field extension. Show that if $H_1 \subseteq H_2 \subseteq \mathrm{Aut}(K/F)$ are subgroups, then $K^{H_2} \subseteq K^{H_1}$.