Math 115A: Problem set 6

Sections 1 and 3. Instructor: James Freitag

Due 11/13

Problem 1 Eigenvalues and determinants

Let A be an $n \times n$ matrix with distinct eigencalues $c_1, \ldots, c_n$. Show that $det(A) = \prod_{i=1}^{n} c_i$. Show that $tr(A) = \sum_{i=1}^{n} c_i$.

Problem 2 Give an example

Give an example of a matrix $A \neq id$ in $M_{2\times 2}(\mathbb{R})$ such that A has eigenvectors $(1, 0)$ and $(1, 1)$ such that $A^2 = id$.

Problem 3 Exercises from the book

Do the following exercises from book:

- Problems 2, 4, 5, 6 from section 5.2.