

MAT 150C, Spring 2017

Homework Assignment 2

Due before the start of the class on Monday, April 17

Please read Sections 10.1-10.5 of the textbook before starting on the problem set.

Written Assignment:

Problem B; Page 315: exercise 3.1; Pages 317-318, exercises 5.1, 5.4.

- B.** a) Prove that two commuting operators acting on a complex vector space have a common eigenvector.
b) Prove that k commuting operators acting on a complex vector space have a common eigenvector for all $k > 0$.
c) Let G be a finite abelian group. Prove that every irreducible representation of G is one-dimensional. *Hint: use the result of (b).*

The homework must be legible, and written in connected sentences that explains what you are doing. Just the answer (whether correct or not) is not enough. Please put your name and section number on every page and staple the pages together. Homework should be handed in on time, late homework will not be graded.