Math 132
Winter 2017

UPDATED GENERAL INFORMATION — JANUARY 27, 2017

Modified `notes` *files*

It appears that the problems with the Department scanner have been resolved, and the current versions of the files will be replaced by color copies. There will be no changes to the material itself except to correct mistakes as they are noted.

General remarks on misprints

If minor misprints are found in the files, in some cases they might be corrected without an explicit announcement. Therefore if it looks as if something is incorrect, it probably is worthwhile to check the version of the file posted to the course directory and see if the questionable piece has been corrected. If not, then of course the possible problem should be brought to my attention.

The first midterm examination

The first midterm examination, which will take place on **Wednesday, February 1**, will cover everything through Section 6B in Axler; this supersedes earlier statements in class and reduces the amount covered.

The problems on the exam will be similar to moderately challenging exercises. Knowledge of basic definitions and their implications, statements of main results, and computational techniques will be assumed. Some concepts to know include eigenvalues and eigenvectors, diagonalizability, triangular form, inner products and their properties, and the Gram-Schmidt orthogonalization process. Also, the ability to reproduce simple derivations of formulas and statements will be tested; examples of the difficulty level include the linear independence of a set consisting of nonzero, mutually orthogonal vectors or the verification of the Triangle Inequality assuming the Cauchy-Schwarz-Bunyakovskii inequality (only over the reals).

Here are a few sample questions to consider. They might be more demanding than problems which will appear on the exam but not dramatically so.

1. Find the eigenvalues and eigenvectors of the matrix

$$\begin{pmatrix} 1 & 1 & -1 \\ 0 & 1 & 0 \\ 0 & 0 & 2 \end{pmatrix}$$

determine if it is diagonalizable, and give reasons for your conclusion.

2. Find the complex eigenvalues and eigenvectors for the matrix

$$\begin{pmatrix} 1 & -1 \\ 1 & 1 \end{pmatrix}$$

and prove that the eigenvectors for distinct eigenvalues are orthogonal to each other.