

MATH 211 ASSIGNMENT 5

Fall 2008

All problems, unless otherwise noted, taken from textbook : D. Lay, Linear Algebra and its Applications. Answers to True-False questions at bottom.

1. Section 4.9 : 1,4,5,7,9
2. Section 5.1 : 24,25,26,27,29
3. Section 5.2 : 23,24
4. Section 5.3 : 21c,d, 22
5. Section 5.5 : 3,4,5
6. A few more true-false - here A, P are $n \times n$ and P is invertible.
 - (1) A and A^T have the same eigenvalues.
 - (2) A and A^T have the same eigenvectors.
 - (3) If \mathbf{x} is an eigenvector of A , then it is also an eigenvector of A^2 .
 - (4) If \mathbf{x} is an eigenvector of A , then it is also an eigenvector of A^{-1} .
 - (5) If \mathbf{x}, \mathbf{y} are both eigenvectors of A , then so is $\mathbf{x} + \mathbf{y}$.
 - (6) If A is 4×4 and has eigenvalues $3, -2, 4 - i, 4 + i$ then A is not symmetric.
 - (7) If A is symmetric then it is diagonalizable.
 - (8) If A is diagonalizable then it is symmetric.
 - (9) If A has no repeated eigenvalues then it is diagonalizable.
 - (10) If A has a multiple (repeated) eigenvalue then it is not diagonalizable.
 - (11) A and $P^{-1}AP$ have the same eigenvalues.
 - (12) A and $P^{-1}AP$ have the same eigenvectors.

Answers

5.3 21d : F

5.3 22 : FFTF

Extras : TFT TFT TFT FTF