Textbooks: In the assignment, the two texts are abbreviated as follows:


1. Section 5.2 of [FIS], Problem 7.
2. If A is a square matrix prove that $A$ and $A^t$ have the same eigenvalues. Do they have the same eigenvectors? Either prove they do, or give a counterexample.
3. Suppose that $A$ in $M_{n \times n}(R)$ has two distinct eigenvalues $\lambda_1$ and $\lambda_2$, and that $\text{dim}(E_{\lambda_1}) = n - 1$. Prove that $A$ is diagonalizable.
4. Section 5.3 of [FIS], Problem 1 parts (a) to (j) excluding (f).
5. Prove Theorem 5.15 on page 290 of [FIS] and its two corollaries on page 291.
6. Prove that if a 1-dimensional subspace $W$ of $\mathbb{R}^n$ contains a nonzero vector with all nonnegative entries, then $W$ contains a unique probability vector.
7. Section 5.3 of [FIS], Problem 6.
8. Section 5.3 of [FIS], Problem 7.