

- Section 7.1: 2, 4, 6, 10, 12, 16, 18, and 54
- Section 7.2: 10, 12, 32.

Problem 1. (a) Find the eigenvalues of A and of B where

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} \quad B = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}$$

- (b) Is B invertible? Is B diagonalizable?
(c) Compute $B^4 - 3B^2 + I$.
(d) What is $\dim(\ker(A))$.
(e) Find the eigenvectors of A .