Worksheet

Problem 1. Problems with power iteration

Name a source of problems with normalized power iteration.

(This question acts as a survey. Answers to this question are not checked for correctness–all answers are marked as correct.)
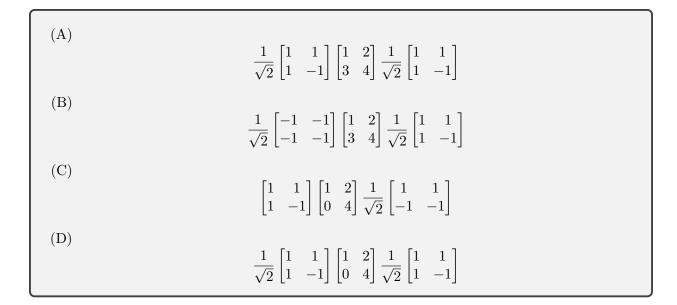
Problem 2. Inverse Iteration with Shift

Consider the matrix

$$A = \begin{bmatrix} 3 & 5 & 7 \\ 0 & 2 & 4 \\ 0 & 0 & 1 \end{bmatrix}.$$

Which eigenvalue belongs to the eigenvector to which inverse iteration with shift 17 converges?

Problem 3. Schur form

Which of the following is a matrix in Schur form?

Problem 4. Rayleigh quotient

Compute the Rayleigh quotient for the matrix

$$A = \begin{bmatrix} 2 & 4 \\ 2 & 2 \end{bmatrix}.$$

with vector $x = \begin{bmatrix} 1 \\ 1 \end{bmatrix}.$