

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 3.4

Math 2050 Worksheet

WINTER 2026

For practice only. Not to be submitted.

1. Find the eigenvalues and corresponding eigenvectors of each of the following matrices.

(a) $A = \begin{bmatrix} 2 & -1 \\ 5 & -4 \end{bmatrix}$

(b) $A = \begin{bmatrix} 3 & 2 \\ 6 & 4 \end{bmatrix}$

(c) $A = \begin{bmatrix} 7 & 0 & -4 \\ 0 & 5 & 0 \\ 5 & 0 & -2 \end{bmatrix}$

(d) $A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & -1 & 2 \end{bmatrix}$

(e) $A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 3 & 0 \\ 1 & -1 & 2 \end{bmatrix}$

2. Let $\mathbf{x}$ be an eigenvector of an invertible matrix A , with corresponding eigenvalue λ . Prove that $\mathbf{x}$ is also an eigenvector of A^{-1} , and determine the corresponding eigenvalue, μ , in terms of λ .