

Dartmouth College
Mathematics 23 - Assignment 17

1. For each of the following matrices, (i) find all eigenvalues and eigenvectors, (ii) indicate both the algebraic multiplicity and the geometric multiplicity of each eigenvalue, (iii) compute the determinant of the matrix. (You may notice a relationship between the determinant and the eigenvalues.)

(a) $\begin{bmatrix} 5 & -1 \\ 3 & 1 \end{bmatrix}$

(b) $\begin{bmatrix} 5 & -1 \\ 4 & 1 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$

(d) Boyce and DiPrima Section 7.3: 22

2. Section 7.2: 23

3. Section 7.4: 5