

Math115 Test2a: Inverses and Eigenvectors

1. (a) Find the eigenvalues of this matrix by using determinant row and column operations.

$$B := \begin{pmatrix} -40 & 147 & 21 \\ -30 & 107 & 15 \\ 120 & -420 & -58 \end{pmatrix}$$

- (b) Find the eigenvectors of B and verify that they satisfy $Bv = \lambda v$.
2. (a) Use row operations to find the inverse of this matrix and check your answer.

$$C := \begin{pmatrix} 2 & 0 & 1 & 2 \\ -1 & -1 & 0 & -2 \\ 1 & -2 & 1 & -2 \\ -1 & 1 & -2 & -1 \end{pmatrix}$$

- (b) Verify the values of any 3 values (from different rows and columns) from the inverse, comparing them with the expected values from the cofactor method.

Math115 Test2b: Inverses and Eigenvectors

1. (a) Find the eigenvalues of this matrix by using determinant row and column operations.

$$B := \begin{pmatrix} 178 & -105 & 35 \\ 125 & -72 & 25 \\ -525 & 315 & -102 \end{pmatrix}$$

- (b) Find the eigenvectors of B and verify that they satisfy $Bv = \lambda v$.
2. (a) Use row operations to find the inverse of this matrix and check your answer.

$$C := \begin{pmatrix} 0 & 2 & 1 & 2 \\ 1 & -1 & -2 & -1 \\ -2 & 1 & 1 & -2 \\ -1 & -1 & 0 & -2 \end{pmatrix}$$

- (b) Verify the values of any 3 values (from different rows and columns) from the inverse, comparing them with the expected values from the cofactor method.

Math115 Test2c: Inverses and Eigenvectors

1. (a) Find the eigenvalues of this matrix by using determinant row and column operations.

$$B := \begin{pmatrix} 143 & -84 & 28 \\ 100 & -57 & 20 \\ -420 & 252 & -81 \end{pmatrix}$$

- (b) Find the eigenvectors of B and verify that they satisfy $Bv = \lambda v$.
2. (a) Use row operations to find the inverse of this matrix and check your answer.

$$C := \begin{pmatrix} -2 & -2 & 1 & 1 \\ -2 & -1 & 0 & -1 \\ 2 & 0 & 1 & 2 \\ -1 & 1 & -2 & -1 \end{pmatrix}$$

- (b) Verify the values of any 3 values (from different rows and columns) from the inverse, comparing them with the expected values from the cofactor method.

Math115 Test2d: Inverses and Eigenvectors

1. (a) Find the eigenvalues of this matrix by using determinant row and column operations.

$$B := \begin{pmatrix} -40 & 147 & 21 \\ -30 & 107 & 15 \\ 120 & -420 & -58 \end{pmatrix}$$

- (b) Find the eigenvectors of B and verify that they satisfy $Bv = \lambda v$.
2. (a) Use row operations to find the inverse of this matrix and check your answer.

$$C := \begin{pmatrix} -2 & -1 & 0 & -1 \\ -2 & -2 & 1 & 1 \\ 2 & 0 & 1 & 2 \\ -1 & 1 & -2 & -1 \end{pmatrix}$$

- (b) Verify the values of any 3 values (from different rows and columns) from the inverse, comparing them with the expected values from the cofactor method.