

MATH 54 – HINTS TO HOMEWORK 13

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Here are a couple of hints to Homework 13. Enjoy!

SECTION 5.1: EIGENVALUES AND EIGENVECTORS

Remember: To find the eigenvalues, calculate $\det(A - \lambda I)$ and find the zeros of the resulting polynomial. To find a basis for the eigenspaces, find $Nul(A - \lambda I)$ for each eigenvalue λ that you found! Also, you should never get $Nul(A - \lambda I) = \{\mathbf{0}\}$

5.1.1, 5.1.5. Calculate Av , where A is the given matrix and v is the given vector.

5.1.13, 5.1.17. Remember that the determinant of an upper-triangular matrix is just the product on the entries of the diagonal! (so you can literally ‘read’ off the eigenvalues)

5.1.21.

- (a) **F** (x has to be nonzero)
- (b) **T**
- (c) **T**
- (d) **T** (depending on what you mean by easy and hard :))
- (e) **F**

SECTION 5.2: THE CHARACTERISTIC EQUATION

5.2.15. Remember that the determinant of an upper/lower-triangular matrix is just the product on the entries of the diagonal!

5.2.19. Just plug in $\lambda = 0$.

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5.2.21.

- (a) **F**
- (b) **F**
- (c) **T**
- (d) **F** (-5 is an eigenvalue)