

MATH 54 – HINTS TO HOMEWORK 14

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Here are a couple of hints to Homework 14. Enjoy!

SECTION 5.3: DIAGONALIZATION

5.3.1, 5.3.3. If $A = PDP^{-1}$, then $A^k = PD^kP^{-1}$

5.3.5. The eigenvalues are just the diagonal entries of D , and the eigenvectors are the corresponding columns of P

5.3.7, 5.3.11, 5.3.17. All you have to do is to find D and P so that $A = PDP^{-1}$. To find D , find the eigenvalues. To find P , find the eigenvectors, and put them together in a matrix.

5.3.21.

- (a) **F**
- (b) **T**
- (c) **F**
- (d) **F**

SECTION 5.4: EIGENVECTORS AND LINEAR TRANSFORMATIONS

5.4.3. Remember that $\mathbf{e}_1 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = (1, 0, 0)$ etc. To find the matrix in (c), just put the answers you find in (b) together in a matrix. It's that easy!

5.4.7. For every polynomial $p = 1, t, t^2$, calculate $T(p)$, and express your answer in terms of $1, t, t^2$. The coefficients give you each column of your matrix.

5.4.15. Find the eigenvectors of A (that's sort of the point of this section)