

Math 2270-1 Maple Assignment

Problem 1. Consider the matrix

$$A = \begin{bmatrix} -2 & -6 & a & b \\ 2 & 5 & c & d \\ 0 & 0 & 0 & 6 \\ 0 & 0 & -2 & 7 \end{bmatrix}$$

where a , b , c and d are the last four digits of your student ID (for example, if your student ID is 00012468, $a = 2$, $b = 4$, $c = 6$ and $d = 8$).

Using a Maple worksheet, calculate:

- all eigenvalues of A and check if the matrix is invertible;
- eigenvectors of A ;
- a change of basis matrix S which diagonalizes the matrix A ;
- the diagonal matrix $D = S^{-1}AS$.

Finally, using these results, calculate A^n where n is any integer.

Instructions: Save your work in a Maple worksheet with the name `<firstname.lastname>.mw`.

Email it as an attachment to `milicic@math.utah.edu` before the last day of classes (April 29).

This assignment is worth 25 points in the final grade calculation (each midterm is worth up to 100 points, and the final up to 200 points).