

Assignment 4, question 1

Write a function `row_reduction` that takes an array `A` and reduces it to row echelon form, returning the modified array `A_row`. To do this, iterate over each row. Find the first non-zero column. Perform row operations so that (a) this first non-zero entry is set to one, and (b) all entries in this column but in rows with larger index are set to zero.

The documentation for the function must be completed: use previous assignments as templates.

Assignment 4, question 2

Write a function `matrix_info` which takes as input an array `A` and returns a dictionary `info` containing key information about the matrix. The dictionary must contain a key `"row echelon"` with value being the row echelon reduce form. The dictionary must contain a key `"row rank"` containing the number of non-zero rows in row echelon form. *If* the matrix is square, the dictionary should contain a key `"determinant"` with the determinant of the matrix, computed as the product of the diagonal entries of the row echelon form.

The documentation for the function must be completed: use previous assignments as templates.