Exercise 1 (Jacobi and SOR method) **(10 points)**

Write Matlab functions with the function headers

a) `function [u,m] = solveJacobi(A, f, s, tol, max)`

b) `function [u,m] = solveSOR(A, f, s, w, tol, max)`

that solve the linear equation system $Au = f$ iteratively by using the Jacobi and the SOR method (A must be a symmetric, positive definite $n \times n$ matrix). `tol` represents a given termination condition (see below), `max` is the maximum number of iterations to perform, s is the iteration start vector, $w \in (0, 2)$ the so-called relaxation parameter of the SOR method. The output arguments of the function are the number of iterations performed m and the approximate solution vector u.

$$\text{Termination condition: } \frac{\|f - Au\|_2}{\|f\|_2} \leq \texttt{tol}$$