## Week 7 Assignment 7

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2018-09-19, 23:59 IST.

1) If $A$ is a symmetric positive definite matrix, which one can be a set of Eigen value of $A$?

   a) $2 + 3i, 2 - 3i, 4$
   b) $2 + 3i, 2 - 3i, -4$
   c) $2, -3, 4$
   d) $2, 3, 4$

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   d)

2) $A = R^T R$ is a positive definite matrix. What can be said about the solution of $Rx = b$?

   a) It may have infinite solution
   b) It has unique solution
   c) It may have no solution
   d) None of the above

   No, the answer is incorrect.
   Score: 0
3) \( \text{If } A = \begin{bmatrix} 2 & 4 \\ 5 & 3 \end{bmatrix}, \text{ find the spectral condition number of } A \) 

- a) 12.25 
- b) 3.5 
- c) 1.125 
- d) 0.285

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

4) Check for which matrix \( A, Ax = b \) can be solved using Gauss-Seidel method

- a) \( A = \begin{bmatrix} 2 & 3 & 4 \\ 5 & 7 & 8 \\ 9 & 10 & 11 \end{bmatrix} \) 
- b) \( A = \begin{bmatrix} 2 & 1 & 0 \\ 1 & 2 & 0 \\ 0 & 1 & 1 \end{bmatrix} \) 
- c) \( A = \begin{bmatrix} 2 & 1 \\ 1 & 1 \\ 1 & 4 & 1 \end{bmatrix} \) 
- d) \( A = \begin{bmatrix} 2 & 1 \\ 1 & 2 \\ 1 & 1 \end{bmatrix} \)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

5) In which case the iteration step \( x^{k+1} = ax^k + t \) will not converging

- a) \( a \) is asymmetric 
- b) \( a \) is diagonally dominant 
- c) \( a \) is singular 
- d) None of the above

- a) 
- b)
6) **Rate of convergence** is a basic iterative process of $Ax = b$ directly depends on:

- a) Spectral condition number of $A$.
- b) Condition number of $A$.
- c) Spectral condition number of iterative matrix $A$.
- d) Spectral radius of iterative matrix $A$.

No, the answer is incorrect.

Score: 0

Accepted Answers:
- c)

7) If the iteration matrix has largest eigenvalue 0.9, what can be the optimum SOR?

- a) 1.21
- b) 1.84
- c) 1.39
- d) 1.04

No, the answer is incorrect.

Score: 0

Accepted Answers:
- d)

8) What is the range of relaxation factor for a successive under relaxation?

- a) $\omega \leq 1.5$
- b) $\omega \leq 1$
- c) $\omega = 1$
- d) $\omega = 2$
9) With which SOR factor an iterative matrix is bond to diverge
   a) $\omega = 1$
   b) $\omega < \omega_{opt}$
   c) $\omega > \omega_{opt}$
   d) $\omega = 2$

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   b)

10) Which of the following matrix cannot be solved using SOR
    a) Identity matrix
    b) Permutation matrix
    c) SPD matrix
    d) Diagonally Dominant matrix

    No, the answer is incorrect.
    Score: 0
    Accepted Answers:
    b)