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Unit 10 - Week 9 : Unit 9

Course outline

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Lecture 41 : Developing computer programs for basic iterative methods

Lecture 42 : Developing computer programs for projection based methods

Lecture 43 : Introduction to Krylov subspace methods

Week 9 Assignment 9

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-10-17, 23:59 IST.**

1) In the steepest descent iteration step which one is the most costly operation? **1 point**

- a. Vector-Vector dot product
- b. Matrix- Vector product
- c. Matrix-Matrix product
- d. Updating solution Variable

No, the answer is incorrect.

Score: 0

Accepted Answers:

b. Matrix- Vector product

2) In the Gauss-Seidel code ,Why does one need to store the old values of x? **1 point**

- a. For computing updated value of x.
- b. To check for the convergence
- c. for Over-relaxation
- d. for under-relaxation.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b. To check for the convergence

3) under which assumption, f and Af are independent? **1 point**

- a. f is zero vector
- b. f is $N(A)$
- c. f is an eigenvector of A .
- d. None of the above

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Iterative methods for solving linear systems using Krylov subspace methods

- Lecture Materials
- Quiz : Week 9 Assignment 9
- Feedback for Week 9

Week 10 : Unit 10

Week 11

Week 12

Download Videos

Assignment Solution

Interactive Session with Students

ce De

Score: 0

Accepted Answers:

d

4) Arnoldi's method gives the following matrix with orthogonal columns

1 point

- a. H_m
- b. \bar{H}_m
- c. AV_m
- d. V_m

No, the answer is incorrect.

Score: 0

Accepted Answers:

d. V_m

5) In full orthogonal method, the basis of krylov subspace is obtained through

1 point

- a. Q-R factorization
- b. Arnoldi-modified Gram-Schmidt method
- c. Minimization of $\|\beta e_i - H_m y\|$
- d. projection of residual into L_m

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

6) Due to which factor FOM is called an orthogonal method?

1 point

- a. x_m lies in an affine space
- b. $L_m = K_m$
- c. Residual is orthogonal to K_m
- d. $L_m = AK_m$

No, the answer is incorrect.

Score: 0

Accepted Answers:

b. $L_m = K_m$

7)

1 point

Lanczos method is

- a transpose invariant method
- an orthogonal projection method
- an oblique projection method
- a recursive method

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

8) Which matrix assume a tridiagonal form in Lanczos method?

1 point

-
- a. H_m
-
- b. K_m
-
- c. V_m
-
- d. Y_m

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. H_m

9)

1 point

In any Krylov subspace method, final approximate solution is given as $x_m = x_0 + V_m y_m$ here y_m is

- A scalar
- A upper-triangular matrix
- A unit column vector
- A column vector

- a
- b
- c
- d

No, the answer is incorrect.

Score: 0

Accepted Answers:

d

10) Which of the following method use a recursive relation?

1 point

- a. Direct Lanczos method
- b. Any krylov subspace method

- c. FOM
- d. Steepest Descent method

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Direct Lanczos method

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