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Unit 10 - Week 9 : Unit 9

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

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. a transpose invariant method
b. an orthogonal projection method
c. an oblique projection method
d. 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. A scalar
b. A upper-triangular matrix
c. A unit column vector
d. 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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