

Unit 9 - Week 7

Course outline

How does an NPTEL online course work?

MATLAB

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Interpolation

Interpolation (Contd...)

Interpolation (Contd...)

Interpolating Polynomial Using Newton's Forward Difference Formula

Error Estimates in Polynomial Approximation

Interpolating Polynomial Using Newton's Backward Difference Formula

Feedback Form

Quiz : Assignment 7

Week 8

Week 9

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Assignment Solutions

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Assignment 7

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

Due on 2020-11-04, 23:59 IST.

1) For the given matrix A ,

$$A = \begin{pmatrix} 4 & 1 & 1 \\ 0 & 2 & 1 \\ -2 & 0 & 9 \end{pmatrix}.$$

Find the bounds for the spectral radius of A using the Gersgorin circles theorem.

- $-1 \leq \rho(A) \leq 9$
 $6 \leq \rho(A) \leq 9$
 $7 \leq \rho(A) \leq 11$
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $7 \leq \rho(A) \leq 11$

1 point

2) Suppose $f(x)$ be a polynomial of degree n then which of the following is correct?

- $\Delta^{n+1}f(x) = 0$
 $\Delta^n f(x) = 0$
 $\Delta^{n+1}f(x) \neq 0$
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\Delta^{n+1}f(x) = 0$

1 point

3) Which of the following is correct?

- $\nabla E = E\nabla + 1$
 $\Delta = \nabla E + 1$
 $\nabla E = \delta E^{1/2}$
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\nabla E = \delta E^{1/2}$

1 point

4) If $f(x)$ is known at the following data points

x	0	1	2	3	4
$f(x)$	1	7	23	55	109

then find $f(0.5)$ using Newton forward difference formula.

- 2.325
 4.754
 3.000
 3.125

No, the answer is incorrect.
Score: 0

Accepted Answers:
3.125

1 point

5) For which of the following matrix, the power method converges quickly?

- $\begin{pmatrix} 4 & 5 \\ 6 & 5 \end{pmatrix}$
 $\begin{pmatrix} -4 & 10 \\ 7 & 5 \end{pmatrix}$
 $\begin{pmatrix} 1 & 1 \\ 0 & 2 \end{pmatrix}$
 $\begin{pmatrix} 3 & 1 \\ 0 & 2 \end{pmatrix}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\begin{pmatrix} 4 & 5 \\ 6 & 5 \end{pmatrix}$

1 point

6) Find $\left(\frac{\Delta^2}{E}\right)x^3$ with $h = 1$

- $6x - 2$
 $3x - 1$
 $3x^2 - 1$
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of these

1 point

7) Consider the following table

x	25	30	35	40	45
y	a	0.5	0.5736	0.6428	0.7071

Assuming third backward difference to be constant. Find the value of a

- 0.4225
 0.4000
 0.3574
 0.3289

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.4225

1 point

8) From the following table find the number of students who obtained less than 45 marks using Newton forward difference formula.

Marks	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
Number of Students	31	42	51	35	31

- 43
 52
 48
 54

No, the answer is incorrect.
Score: 0

Accepted Answers:
48

1 point

9) Consider the following data

x	0	5	10	15
$f(x)$	1	1.6	3.8	6.3

Find the value of $\nabla^2 f(10)$.

- 2.6
 3.2
 2.4
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of these

1 point

10) Consider the following data

x	0	5	10	15
$f(x)$	1	1.6	3.8	6.3

Find the value of $\Delta^2 f(5)$.

- 1.3
 2.3
 3.2
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of these

1 point