

Unit 8 - Week 6

Course outline
How does an NPTEL online course work?
MATLAB
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
<ul style="list-style-type: none"> Matlab Code for Gauss Seidel Method Power Method for Solving Eigenvalues of a Matrix Power Method for Solving Eigenvalues of a Matrix (Contd...) Gershgorin Circle Theorem for Estimating Eigenvalues of a Matrix Gershgorin Circle Theorem for Estimating Eigenvalues of a Matrix Matlab Code for Power Method/ Shifted Inverse Power Method Feedback Form Quiz : Assignment 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Assignment Solutions
Download Videos

Assignment 6

The due date for submitting this assignment has passed. **Due on 2020-11-04, 23:59 IST.**
 As per our records you have not submitted this assignment.

1) Use Lagrange interpolation polynomial of degree one to approximate $f(3)$ if $f(2) = 4$ and $f(5) = 1$ 1 point

- 2
- 2.5
- 3
- 3.5

No, the answer is incorrect.
 Score: 0
 Accepted Answers: 3

2) For the given function $f(x) = \sqrt{1+x}$, let $x_0 = 0, x_1 = 0.6$ and $x_2 = 0.9$. If we construct Lagrange interpolation polynomial of degree two to approximate $f(0.45)$ Find the absolute error 1 point

- 0.032558
- 0.000739
- 0.015608
- None of these

No, the answer is incorrect.
 Score: 0
 Accepted Answers: 0.000739

3) Let $f(x) = \sqrt{x-x^2}$ and $P_2(x)$ be the interpolation polynomial on $x_0 = 0, x_1$ and $x_2 = 1$. Find the largest value of x_1 in $(0, 1)$ for which $f(0.5) - P_2(0.5) = -0.25$ 1 point

- 0.3
- 0.6
- 0.7
- None of these

No, the answer is incorrect.
 Score: 0
 Accepted Answers: None of these

4) For the following data set 1 point

x	1.0	1.3	1.6	1.9	2.2
$f(x)$	0.7651977	0.6200860	0.4554022	0.2818186	0.1103623

Find second divide difference involving 1.6, 1.9 and 2.2

- 0.0680685
- 0.0118183
- 0.0658784
- None of these

No, the answer is incorrect.
 Score: 0
 Accepted Answers: 0.0118183

5) The following data are given for a polynomial $P(x)$ of unknown degree: 1 point

x	0	1	2
$f(x)$	2	-1	4

Determine the coefficient of x^2 in $P(x)$ if all third order differences are 1

- 3.5
- 2.5
- 1.5
- None of these

No, the answer is incorrect.
 Score: 0
 Accepted Answers: 3.5

6) The Newton forward difference formula is used to approximate $f(0.3)$ for the following data 0 points

x	0.0	0.2	0.4	0.6
$f(x)$	15.0	21.0	30.0	51.0

Suppose it is discovered that $f(0.4)$ was understated by 10 and $f(0.6)$ was overstated by 5. By what amount should the approximation to $f(0.3)$ be changed?

- Increased by 5.9375
- Decreased by 3.4020
- Decreased by 4.2872
- None of these

No, the answer is incorrect.
 Score: 0
 Accepted Answers: Increased by 5.9375

7) Use the Newton backward difference formula to approximate $f(2.0)$ for the following data 1 point

x	1	1.3	1.6	1.9	2.2
$f(x)$	0.7651977	0.6200860	0.4554022	0.2818186	0.1103623

- 0.2239
- 0.3126
- 0.4798
- None of these

No, the answer is incorrect.
 Score: 0
 Accepted Answers: 0.2239

8) For the given data 1 point

x	0.0	0.2	0.4	0.6	0.8
$f(x)$	1.0	1.22140	1.49182	1.82212	2.22554

Use Stirling's formula to approximate $f(0.43)$

- 1.75021
- 1.65204
- 1.53725
- None of these

No, the answer is incorrect.
 Score: 0
 Accepted Answers: 1.53725

9) The relationship between E and Δ is? 1 point

- $E = 1 - \Delta$
- $E = 1 + \Delta$
- $E = \Delta - 1$
- $E = \Delta$

No, the answer is incorrect.
 Score: 0
 Accepted Answers: $E = 1 + \Delta$

10) Find $\Delta(x + \cos x)$ with $h = 1$ 1 point

- $1 + 2 \sin(x + \frac{1}{2}). \sin \frac{1}{2}$
- $1 - 2 \sin(x + \frac{1}{2}). \sin \frac{1}{2}$
- $1 - 2 \sin(x - \frac{1}{2}). \sin \frac{1}{2}$
- $1 + 2 \sin(x - \frac{1}{2}). \sin \frac{1}{2}$

No, the answer is incorrect.
 Score: 0
 Accepted Answers: $1 - 2 \sin(x + \frac{1}{2}). \sin \frac{1}{2}$