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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Problem solving through Programming In C (course)

Announcements (announcements) About the Course (https://swayam.gov.in/nd1_noc20_cs06/preview)

Ask a Question (forum) Progress (student/home) Mentor (student/mentor)

Unit 13 - Week 11

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8 Week 9

Week 10

Week 11

Lecture 51 : Interpolation

Assignment 11

The due date for submitting this assignment has passed. Due on 2020-04-15, 23:59 IST. As per our records you have not submitted this assignment.

1) Interpolation is a process for

1 point

1 point

- a) extracting feasible data set from a given set of data
- b) finding a value between two points on a line or curve.
- o) removing unnecessary points from a curve
- d) all of the mentioned

No, the answer is incorrect.

Score: 0

Accepted Answers:

b) finding a value between two points on a line or curve.

Given two data points (a, f(a)) and (b, f(b)), the linear Lagrange polynomial f(x) that passes through these two points are given as

a)
$$f(x) = \frac{x-b}{a-b}f(a) + \frac{x-a}{a-b}f(b)$$

b)
$$f(x) = \frac{x}{a-b}f(a) + \frac{x}{b-a}f(b)$$

c)
$$f(x) = f(a) + \frac{f(b)-f(a)}{b-a}f(b)$$

(unit? unit=12&lesson=65)

O Lecture 52: Trapezoidal Rule and Runge-Kutta Method (unit? unit=12&lesson=66)

Lecture 53 : Recursion (unit? unit=12&lesson=67)

Lecture 54 : Recursion(Contd.) (unit? unit=12&lesson=68)

Lecture 55 : Structure (unit? unit=12&lesson=69)

O Quiz:

Assignment 11 (assessment?

Week-11

name=158)

Program-01

(/noc20_cs06/progassignmento, the answer is incorrect. name=169)

Week-11

Program-02

(/noc20_cs06/progassignment? name=170)

Week-11 Program-03 (/noc20 cs06/progassign

name=171) O Week-11

Program-04

(/noc20_cs06/progassign nemt? name=172)

Week-11

Program-05

Accepted Answers: name=173)

 Feedback For Week 11 (unit? unit=12&lesson=183)

Week 12

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Assignment Solution

d) $f(x) = \frac{x-b}{a-b} f(a) + \frac{x-a}{b-a} f(b)$

No, the answer is incorrect.

Score: 0

3)

Accepted Answers:

d)
$$f(x) = \frac{x-b}{a-b}f(a) + \frac{x-a}{b-a}f(b)$$

A Lagrange polynomial passes through three data points as given below

| polynomiai j | | passes and | ragn unce a | ata pomis as |
|--------------|------|------------|-------------|--------------|
| | x | 5 | 10 | 15 |
| | f(x) | 15.35 | 9.63 | 3.74 |

The polynomial is determined as $f(x) = L_0(x)$. (15.35) + $L_1(x)$. (9.63) + $L_2(x)$. (3.74)

The value of f(x) at x = 7 is

- a) 12.78
- **b**) 13.08
- oc) 14.12
- **d**) 11.36

Score: 0

Accepted Answers:

13.08

The value of $\int_0^{1.5} xe^{2x} dx$ by using one segment trapezoidal rule is (upto four decimal places)

No, the answer is incorrect.

Score: 0

Type: Numeric) 22.5962

5) Accuracy of the trapezoidal rule increases when

- a) integration is carried out for sufficiently large range
- b) instead of trapezoid, we take rectangular approximation function
- o c) number of segments are increased
- d) integration is performed for only integer range

No, the answer is incorrect.

Score: 0

Accepted Answers:

c) number of segments are increased

1 point

1 point

1 point

6) **1 point**

Solve the ordinary differential equation below using Runge-Kutta 4th order method.

Step size h=0.2.

$$5\frac{dy}{dx} + xy^3 = \cos(x), y(0) = 3$$

The value of y(0.2) is (upto two decimal points)

- a) 2.86
- **b**) 2.93
- oc) 3.13
- od) 3.08

No, the answer is incorrect.

Score: 0

Accepted Answers:

b) 2.93

7) Which of the following cannot be a structure member?

1 point

- a) another structure
- b) function
- oc) array
- d) none of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

b) function

3) 1 point

Match the following

- A. Newton Method
- B. Lagrange Polynomial
- C. Trapezoidal Method
- D. Runge Kutta Method
 - a) A-2, B-4, C-1, D-3
 - b) A-3, B-1, C-2, D-4
 - oc) A-1, B-4, C-3, D-2
 - od) A-2, B-3, C-4, D-1

No, the answer is incorrect.

Score: 0

Accepted Answers:

9) **1 point**

1. Integration

2. Root finding

3. Differential Equation

4. Interpolation

```
The value of \int_1^3 e^x (\ln x) dx calculated using the Trapezoidal rule with five
subintervals is
(* range is given in output rather than single value to avoid approximation
error)
  a) 12.56 to 12.92
  b) 13.12 to 13.66
  oc) 14.24 to 14.58
  d) 15.13 to 15.45
 No, the answer is incorrect.
 Score: 0
 Accepted Answers:
 c) 14.24 to 14.58
                                                                             1 point
Consider the same recursive C function that takes two arguments
unsigned int func(unsigned int n, unsigned int r)
 if (n > 0) return (n\%r + \text{func } (n/r, r));
 else return 0;
What is the return value of the function func when it is called as func(513, 2)?
  (a) 9
  (b) 8
  0 c) 5
  (d) 2
 No, the answer is incorrect.
 Score: 0
 Accepted Answers:
 d) 2
```