Week 5 Assignment

The due date for submitting this assignment has passed. Due on 2017-09-14, 23:59 IST.

Submitted assignment

1) In Polynomial Interpolation Method, derivative of weight function at a point depends on

- Derivative of the polynomial basis
- Points in the support domain including the point under consideration
- Points in the support domain excluding the point under consideration

No, the answer is incorrect.
Score: 0

Accepted Answers:
- Derivative of the polynomial basis
- Points in the support domain including the point under consideration

2) Moving Least Squares method utilizes

- Weighted error minimization approach
- Weighted error maximization approach

No, the answer is incorrect.
Score: 0

Accepted Answers:
- Weighted error minimization approach

3) Weight function in Moving Least Squares method should be

- Positive valued within support domain
- Zero outside support domain
- Negative valued outside support domain
- Does not depend on support domain

No, the answer is incorrect.
Score: 0

Accepted Answers:
- Positive valued within support domain
- Zero outside support domain

4) Space Time Moving Least Squares method utilizes

- Taylor Series expansion to represent derivatives
- Maclaurin Series expansion to represent derivatives

No, the answer is incorrect.
Score: 0

Accepted Answers:
- Taylor Series expansion to represent derivatives
5) Space time polynomial basis for two-dimensional in space and one-dimensional in time contains:

- 11
- 9
- 8
- 10

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

6) In weight function calculation for Space time Moving Least Squares method, norm correction is performed to:

- Neutralize the effect of order difference between spatial variables
- Neutralize the effect of order difference between spatial and temporal variables

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

Neutralize the effect of order difference between spatial and temporal variables

7) In Scilab, execute `det(A)` [determinant] for:

\[
A = \begin{pmatrix}
1 & 2 & -3 & 4 & 5 \\
0 & 3 & -5 & -7 & 9 \\
5 & -4 & 3 & -2 & 1 \\
1 & 4 & -7 & -10 & 13 \\
-15 & 13 & 11 & -9 & 2
\end{pmatrix}
\]

The determinant value is:

- 3994
- 3394
- 3944

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

3944

8) In Scilab, execute `inv(A)` [inverse] for:

\[
A = \begin{pmatrix}
1 & 2 & -3 & 4 & 5 \\
0 & 3 & -5 & -7 & 9 \\
5 & -4 & 3 & -2 & 1 \\
1 & 4 & -7 & -10 & 13 \\
-15 & 13 & 11 & -9 & 2
\end{pmatrix}
\]

The value of (3, 3) term of the inverse matrix is:

- -0.1340241
- 0.1340241
- 0.2866184
- 0.1389452

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

0.1389452

9) In Scilab, use `gausselim.sci` to solve the following problem:

\[
\begin{pmatrix}
1 & 2 & -3 & 4 & 5 \\
0 & 3 & -5 & -7 & 9 \\
5 & 1 & 3 & -2 & 1 \\
1 & 4 & -7 & 1 & 13 \\
10 & 13 & 11 & -9 & 2
\end{pmatrix}
\begin{pmatrix}
\phi_1 \\
\phi_2 \\
\phi_3 \\
\phi_4 \\
\phi_5
\end{pmatrix}
= \begin{pmatrix} 37 \\ 8 \\ 13 \\ 57 \\ 43 \end{pmatrix}
\]
The value of $\phi_3$ term is

- 1
- 2
- 3
- 4
- 5

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

10)

In Scilab, use $\phi = A \backslash r$ to solve the following problem

$$A = \begin{pmatrix} 1 & 2 & -3 & 4 & 5 \\ 0 & 3 & -5 & -7 & 9 \\ 5 & 1 & 3 & -2 & 1 \\ 1 & 4 & -7 & 1 & 13 \\ 10 & 13 & 11 & -9 & 2 \end{pmatrix}$$

and

$$r = \begin{Bmatrix} 37 \\ 8 \\ 13 \\ 57 \\ 43 \end{Bmatrix}$$

The value of $\phi_2$ term is

- 1
- 2
- 3
- 4
- 5

No, the answer is incorrect.
Score: 0
Accepted Answers: 2