Numerical Methods - Spring Semester - 2021/2022

Question 1
Not yet answered
Marked out of 10

⚑ Flag question

compute the determinants of the following matrix

$$\begin{bmatrix} 1 & 1 & -1 & 1 \\ 1 & 2 & -4 & -2 \\ 2 & 1 & 1 & 5 \\ -1 & 0 & -2 & -4 \end{bmatrix}$$

Select one:
- ○ 12
- ○ 1
- ○ 0
- ◉ 14

Question 2
Not yet answered
Marked out of 0.50

⚑ Flag question

Use the Bisection method to find p_3 for $f(x) = \sqrt{x} - \cos x$ on $[0, 1]$.

Select one:
- ○ a. $p_3 = 0.429$
- ◉ b. $p_3 = 0.325$
- ○ c. $p_3 = 0.625$
- ○ d. $p_3 = 1.625$

Question 3
Not yet answered
Marked out of 1.00

⚑ Flag question

Use the forward-difference formulas and backward-difference formulas to determine each missing entry in the following table

x	$f(x)$	$f'(x)$
0.5	0.4794	
0.6	0.5646	
0.7	0.6442	

Select one:
- ○ a. $f'(0.5) \approx -0.8520$, $f'(0.6) \approx 0.9520$ and $f'(0.6) \approx 0.7960$
- ○ b. $f'(0.5) \approx -0.8520$, $f'(0.6) \approx 0.8520$ and $f'(0.6) \approx 0.6960$
- ○ c. $f'(0.5) \approx 0.9520$, $f'(0.6) \approx 0.8520$ and $f'(0.6) \approx 0.2960$
- ◉ d. $f'(0.5) \approx 0.8520$, $f'(0.6) \approx 0.8520$ and $f'(0.6) \approx 0.7960$
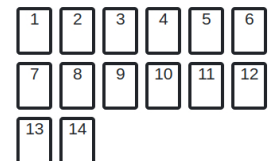
Question 4
Not yet answered
Marked out of 1.00

⚑ Flag question

The Arithmetic IEEE Standard 754 single precision of $(20.125)_{10}$ is

01100001101000011000000000000000

Quiz navigation

1	2	3	4	5	6
7	8	9	10	11	12
13	14				

Finish attempt ...

Time left **0:15:59**

Select one:

○ True

◉ False

Question 5

Not yet answered

Marked out of 0.50

⚑ Flag question

A^{-1} is unique.

Select one:

◉ True

○ False

Question 6

Not yet answered

Marked out of 0.50

⚑ Flag question

Determine a function of the form $y = a_0 + a_1 x$ that best fits, in the least squares sense, using the following data:

x_i	1	2	3	4	5
y_i	2	5	3	8	7

Select one:

○ $y = -1.5 + 7.55x$

○ $y = 1.1 + 1.3x$

◉ $y = 1.5 - 6.55x$

○ $y = -12.5 + 7.3x$

Question 7

Not yet answered

Marked out of 0.50

⚑ Flag question

The inverse of this matrix A = $\begin{bmatrix} 1 & 2 & 0 \\ 2 & 1 & -1 \\ 3 & 1 & 1 \end{bmatrix}$

is B = $\begin{bmatrix} -\frac{1}{4} & \frac{1}{4} & \frac{1}{4} \\ \frac{5}{8} & -\frac{1}{8} & -\frac{1}{8} \\ \frac{1}{8} & -\frac{5}{8} & \frac{3}{8} \end{bmatrix}$

Select one:

◉ True

○ False

Question 8

Not yet answered

Marked out of 0.50

⚑ Flag question

if A^{-1} exists, then $(A^{-1})^t = (A^t)^{-1}$.

Select one:

◉ True

○ False

Question 9

Not yet answered

Marked out of 1.00

⚑ Flag question

perform the divided differences method to find the interpolating polynom of these points and approximate the polynomial at $f(7)$

x	5	6	9	11
Y=f(x)	12	13	14	16

Select one:

◉ 13.47

O   13.065

O   11.198

O   12.45

Not yet
answered

Marked out of
0.50

Flag
question

Perform the following matrix-vector multiplication

$$\begin{bmatrix} 2 & 1 \\ -4 & 3 \end{bmatrix}\begin{bmatrix} 3 \\ -2 \end{bmatrix}$$

Select one:

O $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$

O $\begin{bmatrix} 4 \\ -18 \end{bmatrix}$

◉ $\begin{bmatrix} -4 & 10 \\ 1 & 15 \end{bmatrix}$

Not yet
answered

Marked out of
1.00

Flag
question

The Arithmetic IEEE Standard 754 single precision of $(20.125)_{10}$

is

01000001101000010000000000000000

Select one:

O   True

◉   False

Not yet
answered

Marked out of
1.00

Flag
question

The Arithmetic IEEE Standard 754 single precision of $(19.125)_{10}$

is

01000001100110010000000000000000

Select one:

◉   True

O   False

Not yet
answered

Marked out of
1.00

Flag
question

Let $f(x) = x^2 - 6$ and $p_0 = 1$. Use Newton's method to find p_2.

Select one:

◉   2.60714

O   3.60714

O   2.90714

O   2.06714

Not yet
answered

Marked out of
0.50

Flag
question

A **diagonal** matrix $D = [d_{ij}]$ is a square matrix with $d_{ij} = 0$ whenever $i \neq j$.

Select one:

◉   True

O   False

Finish attempt ...