

QUIZ 2

NOTES

(i) Let m and n be the last two digits of the student ID ($0 \leq m, n \leq 9$). Set $\mathcal{M} = \frac{m + n + 15}{10}$. For example, if the student ID is 1910273, then $m = 7$, $n = 3$ and $\mathcal{M} = \frac{7 + 3 + 15}{10} = 2.5$

(ii) Send your results to the following two email addresses (to avoid loss)

nan.thanh@lethai.vn and **thanh@lethai.edu.vn**

Question 1. Given the system of linear equations: $\begin{cases} 3\mathcal{M}x_1 - 1.5x_2 = 4.5 \\ 1.8x_1 + 4\mathcal{M}x_2 = 5.2 \end{cases}$. Use the Gauss-Seidel Method with $X^{(0)} = (0.4, 0.6)^T$ to find an approximation solution $X^{(2)}$ and its error. Choose l_∞ -norm.

RESULTS: $x_1^{(2)} \approx$ _____, $x_2^{(2)} \approx$ _____, $\Delta_{X^{(2)}} \approx$ _____

Question 2. Given the table:

x	1.23	1.41	1.65	1.84
y	3.18	$1.2\mathcal{M}$	4.32	$1.5\mathcal{M}$

. Use Lagrange's Interpolation Polynomial to approximate $y(1.52)$.

RESULTS: $y(1.52) \approx$ _____

Question 3. Given the table:

x	1.0	1.5	2.0
y	\mathcal{M}	3.45	4.17

. Use the Natural Cubic Spline to approximate $y(1.12)$ and $y(1.65)$.

RESULTS: $y(1.12) \approx$ _____, $y(1.65) \approx$ _____

Question 4. Given the table:

x	1.2	1.4	1.6	1.8
y	\mathcal{M}	2.53	$2\mathcal{M}$	3.76

. Use the Forward Newton Interpolation Polynomial to approximate $y'(1.32)$.

RESULTS: $y'(1.32) \approx$ _____

Question 5. Given the table:

x	1.2	1.3	1.4	1.5	1.6	1.7	1.8
y	\mathcal{M}	2.13	$1.2\mathcal{M}$	3.35	$1.4\mathcal{M}$	4.51	$1.6\mathcal{M}$

 of a function

$y = f(x)$. Use the Composite Simpson Formula to approximate the integral $I = \int_{1.2}^{1.8} xf(x) dx$ with the step size $h = 0.1$.

RESULTS: $I \approx$ _____