Sino Bright School Chongqing

# Monthly Exam, 2024-2025 T2

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|---|---|
| Subject: | Further Math |
| Date: | May 2025 |
| Time: | 60 Minutes |
| Teacher: | Shi Feng |

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**IMPORTANT: Read together before beginning the exam.**

Students must complete the assessments to the best of their ability. Any students found cheating during an exam will be given a zero and referred to the Principal for further disciplinary measures. Cheating is a serious offense.

"Cheating" may include any of the following:

- Having course papers, notes, unapproved data sheets or other course-related materials in the exam room without the express permission of the subject class teacher in charge of the exam.

- Using or even having a cellphone or other electronic device in the exam room without the express permission of the subject class teacher in charge of the exam.

- Attempting to communicate, either verbally or non-verbally with other students during the exam.

- Having exam-related materials prior to the writing of the exam.

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| **Mark Breakdown:** | **Student Name:** |
|---|---|
| Part I: Multiple Choice Questions $5pts \times 10$ | |
| Part II: Short Answer Questions $5pts \times 4$ | |
| Part III: Long Answer Questions $30pts$ | |
| Total Score: 100 | Score: _____ |

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**Special Instructions/Materials Allowed:**

- Pen

- Calculator

# Part I: Multiple Choice Questions ($5pts \times 10$)

1. If a root of $f(x) = 0$ lies in $[3, 4]$, what is the midpoint after the first iteration of interval bisection?
   A) 3.25
   B) 3.5
   C) 3.75
   D) 3.0

2. The formula for the first approximation $x_1$ using linear interpolation is:
   A) $x_1 = a - \frac{f(a)(b-a)}{f(b)-f(a)}$
   B) $x_1 = \frac{a+b}{2}$
   C) $x_1 = a - \frac{f(a)}{f'(a)}$
   D) $x_1 = \frac{f(b)-f(a)}{b-a}$

# Part II: Short Answer Questions ($5pts \times 4$)

1. After 3 iterations of interval bisection on $[3, 4]$, the interval length is _____.

# Part III: Long Answer Questions ($30pts$)

1. Let $z^6 = 1$.

   (a) Find all the solutions to the equation.

   (b) Show each solution on an Argand diagram.

(c) Show that each solution lies on a circle with center $(0,0)$ and radius 1.