Math 1AA3/1ZB3

1st Sample Test #1

Name:_____
(Last Name) (First Name)

Student Number:_____ **Tutorial Number:**_____

This test consists of 20 multiple choice questions worth 1 mark each (no part marks), and 1 question worth 1 mark (no part marks) on proper computer card filling. All questions must be answered on the COMPUTER CARD with an HB PENCIL. Marks will not be deducted for wrong answers (i.e., there is no penalty for guessing). You are responsible for ensuring that your copy of the test is complete. Bring any discrepancy to the attention of the invigilator. Calculators are NOT allowed.

1. Evaluate the following integral,

$$\int_0^{\sqrt[4]{\pi}} x^7 \sin x^4 \, dx$$

(a) $\frac{\pi}{4}$ **(b)** $\frac{\pi}{3}$ **(c)** $\frac{\pi}{2}$ **(d)** π **(e)** $\frac{3\pi}{2}$

2. Which of the following series converge?

(i) $\sum_{n=1}^{\infty} \frac{e^{-\sqrt{n}}}{\sqrt{n}}$ (ii) $\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^3}$

(a) (i) only **(b)** (ii) only **(c)** (i) and (ii) **(d)** neither

3. What is the minimum number of terms needed in order to estimate the sum

$$\sum_{n=1}^{\infty} \frac{1}{(3n+5)^4}$$

correct to within .001?

(a) 1 **(b)** 2 **(c)** 3 **(d)** 4 **(e)** 5

4. Evaluate the following improper integral.

$$\int_{-\infty}^{0} x^4 e^{x^5} dx$$

(a) 1 **(b)** $\frac{1}{4}$ **(c)** $\frac{1}{5}$ **(d)** 0 **(e)** Divergent