UNIVERSITI SAINS MALAYSIA

Supplementary Semester Examination
Academic Session 2004/2005

May 2005

IUK 191E – Mathematic I
[Matematik I]

Duration: 3 hours
[Masa: 3 jam]

Please check that this examination paper consists of FOUR (4) pages of printed material before you begin the examination.

[Sila pastikan bahawa kertas peperiksaan ini mengandungi EMPAT (4) muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]

Instructions:
1. Answer **FIVE (5)** questions. All questions can be answered either in Bahasa Malaysia or English.

Arahan:
1. *Jawab **LIMA (5)** soalan. Semua soalan boleh dijawab dalam Bahasa Malaysia atau Bahasa Inggeris.*

...2/-

1. (a) Find the domain of the function

$$f(x) = \sqrt{1 + \ln x}$$

(b) find

$$\lim_{x \to +\infty} xe^x$$

(20 marks)

(a) Cari domain bagi fungsi

$$f(x) = \sqrt{1 + \ln x}$$

(b) cari

$$\lim_{x \to +\infty} xe^x$$

(20 markah)

2. Find the area of the region enclosed by $x = y^2$ and $y = x - 2$ by integrating with respect to x.

(20 marks)

Cari luas yang dibatasi oleh $x = y^2$ *dan* $y = x - 2$ *dengan mengkamirkan terhadap x.*

(20 markah)

3. Use Cramer's rule to solve

$$x_1 + 2x_2 + x_3 = 5$$
$$2x_1 + 2x_2 + x_3 = 6$$
$$x_1 + 2x_2 + 3x_3 = 9$$

(20marks)

Guna kaedah Cramer untuk selesaikan

$$x_1 + 2x_2 + x_3 = 5$$
$$2x_1 + 2x_2 + x_3 = 6$$
$$x_1 + 2x_2 + 3x_3 = 9$$

(20 markah)

4. (a) Find $\frac{d^2y}{dx^2}$

$$y = \sqrt{x}\ \sin(\sqrt{x})$$

(b) Calculate

$$\frac{1}{1-i}$$

(20 marks)

(a) Cari $\frac{d^2y}{dx^2}$

$$y = \sqrt{x}\ \sin(\sqrt{x})$$

(b) Kira

$$\frac{1}{1-i}$$

(20 markah)

5. Solve the equation

$$\sqrt{1+x^2}\ y'+x\ (1+y)=0$$

(20 marks)

Selesaikan persamaan

$$\sqrt{1+x^2}\ y'+x\ (1+y)=0$$

(20 markah)

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