



Sri Lanka Institute of Information Technology

B.Sc. Degree  
in  
Information Technology

Mid Examination  
Year 1, Semester 1 (2016)  
January Intake

Mathematics for Information Technology (N109)

Duration: 1 Hour

Instructions to Candidates:

- ◆ This is a closed book examination.
- ◆ This paper contains 5 questions on 1 page without the cover page.
- ◆ Answer all questions in the WORKBOOK provided.
- ◆ Read all questions before answering.
- ◆ The total marks obtainable for this examination is 30.

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1) Specify the domain of the given functions.

i)  $f(x) = \frac{12}{\sqrt{10x+1}}$

ii)  $f(x) = \sqrt{|x| - 7}$

(2 x 2 marks)

2) Solve the given equations for  $x$ .

i)  $\log_{10} x + \log_{10} 3 = 2\log_{10} 4 - \log_{10} 2$

ii)  $\log_4 x + \log_4(x - 1) = \frac{1}{2}$

iii)  $5(8e^{2x} - 3)^3 - 625 = 0$

(3 x 2 marks)

3) Differentiate the following functions.

i)  $y = (x + 1)(x + 3)^2$

ii)  $y = \frac{5e^x}{3e^x + 1}$

iii)  $y = \ln(1 - 2x)^3$

(3 x 2 marks)

4) Use calculus to sketch the graph of  $f(x) = x^3 - 9x$ . Find the **relative extrema** and **inflection points** if any.

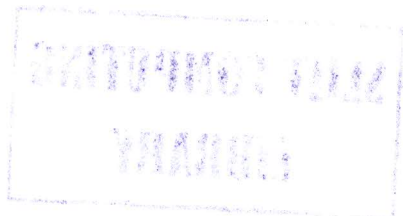
(8 marks)

5) Find the anti-derivatives of the given indefinite integrals.

i)  $\int \left( \frac{2x^2 - x + 3}{\sqrt{x}} \right) dx$

ii)  $\int (2x + 3)^2 dx$

(2 x 3 marks)



**End of the Question Paper.**