Quiz Practice Questions 6 for Mathematics 223
Introductory Analysis I - Fall 2001
Material Covered: Sections 4.1,4.2 of workbook and text
For: Friday, 16th November

This is a 15 minute quiz, worth 5% and marked out of 5 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an $8\frac{1}{2}$ by 11 inch piece of paper may be used as a reference during this quiz. A calculator may also be used. No other aids are permitted.

Name (please print): _____ . **ID Number:** _____.
last first

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1. [3 points] Let $f(x) = 5x^{-2}e^x$.

(a) $f'(x) =$ _____.

(b) minimum value over $[1, 5]$ is _____.

(c) minimum value over $[-1, 5]$ is _____.

2. [2 points] Let $f(x) = \ln[\ln x]^4$.

(a) $f'(x) =$ (circle one) $\frac{4}{x \ln x}$ / $\frac{4[\ln x^3]}{x[\ln x]^4}$ / $\frac{4}{x}$ / $\frac{4}{\ln x}$ / $\frac{4}{x[\ln x]^4}$

(b) $\lim_{x\to\infty} f(x) =$ (circle one) $\mathbf{0}$ / $\mathbf{1}$ / $\mathbf{\ln e}$ / $\boldsymbol{e}$ / $\boldsymbol{\infty}$

1. (a) $\mathbf{5e^x(x^{-2} - 2x^{-3})}$

(b) $\mathbf{(2, 9.24)}$ (GRAPH, 2nd CALC minimum)

(c) $\mathbf{(-1, 1.84)}$ (GRAPH, 2nd CALC value at $x = -1$)

2. (a) $\frac{\mathbf{4}}{\boldsymbol{x \ln x}}$

$$\begin{aligned} y &= \ln[\ln x]^4 \\ f(x) &= \ln x \\ f'(x) &= \frac{1}{x} \\ g(x) &= [\ln x]^4 \\ g'(x) &= 4[\ln x]^3 \frac{1}{x} \\ f'(g)g' &= \frac{4}{x \ln x} \end{aligned}$$

(b) $\boldsymbol{\infty}$ (calculator)