**Quiz 6 (Group) for Mathematics 223**
**Introductory Analysis I - Spring 1999**
**Material Covered: Sections 5.3,5.4 of Workbook and notes**
**For: 14th April**

This is a 15 minute quiz, worth 6% and marked out of 6 points. Although this is a group quiz, only *one* answer set is handed in for each group. The names of all members of the group *who contributed to this quiz* should appear on the cover sheet of the quiz.

**Name 1 (please print):** _____ .

last                                   first

**Name 2 (please print):** _____ .

last                                   first

**Name 3 (please print):** _____ .

last                                   first

**Name 4 (please print):** _____ .

last                                   first

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**1.** [2] Let $f(x) = (3x^2 - 5x)\ln 4x^2$

Then $f'(x) =$ _____ .

**2.** [1] Let $f(x) = \ln(e^x)$

Then $f'(x) =$ _____ .

**3.** [1] Let $f(x) = 4^{5x^5}$

Then $f'(x) =$ _____ .

**4.** [2] Let $f(x) = (3\ln x + 2)^{e^x}$

Then $f'(x) =$ _____ .

**1.** [2] Let $f(x) = (3x^2 - 5x)\ln 4x^2$

Then $f'(x) = \ln(4x^2)(6x - 5) - (3x^2 - 5x)\frac{8x}{4x^2}$

**2.** [1] Let $f(x) = \ln(e^x)$

Since $f(x) = x$, then $f'(x) = 1$.

**3.** [1] Let $f(x) = 4^{5x^5}$

Then $f'(x) = 4^{5x^5}\ln(4)(25x^4)$.

**4.** [2] Let $y = f(x) = (3\ln x + 2)^{e^x}$

Since $\ln(y) = \ln\left[(3\ln x + 2)^{e^x}\right] = e^x \ln(3\ln x + 2)$,

Then $\frac{1}{y}\frac{dy}{dx} = \ln(3\ln(x) + 2)e^x + e^x\left(\frac{1}{3\ln(x)+2}\right)\left(\frac{3}{x}\right) = \ln(3\ln(x) + 2)e^x + \frac{3e^x}{3x\ln(x)+2x}$.