

King Fahd University of Petroleum and Minerals

Department of Mathematical Sciences

Math 101 (calculus I)

Quiz 4 (A) Semester I, 2004-2005 (041)

Name:.....

ID #:.....

Sec#:.....

(1) Differentiate each of the following.

(10pts)

(i) $y = x(\sin^{-1} x)^{x^3}$.

(ii) $y = \sqrt{x}^{\sqrt{x}} e^{x^2}$.

(2) Show that $\frac{d}{dx}[\csc^{-1} x] = \frac{-1}{|x|\sqrt{x^2-1}}$.

(5pts)

(3) Evaluate each of the following limits.

(15pts)

(i) $\lim_{h \rightarrow 0} \frac{\tan^{-1}(\frac{1}{2}-h) - \tan^{-1}(\frac{1}{2})}{h}$.

(ii) $\lim_{x \rightarrow 0} \frac{(\frac{1}{2})^x - 1}{x}$.

(iii) $\lim_{x \rightarrow 0} \frac{x(1 - \cos x)}{x - \sin x}$.

Dr. M. R. Alfuraidan