Serial No.:_____ Student Name:_____ Student Number: _____

Instructor: M. Z. Abu-Sbeih . Math 101- Q4 Date: 25-4-2007 A

Problem 1: (5 points) If $\frac{x^2}{9}+\frac{y^2}{4}=2$ find y'' at the point (3,2)

Problem 2: (4 points) Find $D^{101}\ln(x+1)$

Problem 4: (4 points) Define $\text{csch}x$ in terms of e^x and e^{-x} then this definition to prove that $\frac{d}{dx}(\text{csch}x)=-\text{csch}x\coth x$

Problem 4: (7 points) Find y'. DO NOT SIMPLIFY.

(a) $y=\tanh^{-1}\sqrt{x^2+1}$

(b) $y=\cot^{-1}(\sin x)$

(c) $y=(1+\cos x)^x$

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Problem 1: (5 points) If $\frac{x^2}{4}+\frac{y^2}{9}=2$ find y'' at the point (2,3)

Problem 2: (4 points) Find $D^{100}\ln(x-1)$

Problem 4: (4 points) Define $\text{sech}x$ in terms of e^x and e^{-x} then this definition to prove that $\frac{d}{dx}(\text{sech}x)=-\text{sech}x\tanh x$

Problem 4: (7 points) Find y'. DO NOT SIMPLIFY.

(a) $y=\coth^{-1}\sqrt{x^2+1}$

(b) $y=\tan^{-1}(\cos x)$

(c) $y=(1+\sin x)^x$