MATH 12002 **HOMEWORK #8 (14 pts)** **SPRING 2009**
SHOW ALL WORK FOR FULL CREDIT — PLEASE CIRCLE YOUR FINAL ANSWER

DUE: TUESDAY, APRIL 28, 2009 AT THE BEGINNING OF CLASS

1. (2 pts) If $y = (\sin x)^{e^{x^2}}$ find y'.

2. (1 pt) Find $\displaystyle\int \frac{\cos(\ln x)}{x}\,dx$.

Homework Score: Course Grade:

$\overline{}_{14} =$ $\overline{}_{650} =$

3. (1 pt each) Find the derivative of the following functions. (You do not need to simplify)

(a) $f(x) = \ln\left[\dfrac{(4x^2 + 1)^3}{(5x - 7)^8}\right]$

(b) $g(x) = \ln(\ln(\sin x)) + \arcsin(3x^2)$

(c) $h(x) = e^{4x} \ln 2x + e^{\sin x}$

(d) $f(x) = 4^{\tan x} - e^{-x}$

(e) $g(x) = \left[e^{6x-1} - e^{-2x} \right]^7$

4. (2 pts each) Evaluate the following integrals.

(a) $\displaystyle \int e^{3x} \sqrt{5 + e^{3x}} \, dx$

(b) $\displaystyle \int \frac{\csc^2 x - 4x}{2x^2 + \cot x} \, dx$

(c) $\displaystyle \int (\cot 4\theta) \ln (\sin 4\theta) \; d\theta$