MATH 152
Mrs. Bonny Tighe

EXAM IA

7.1-8.3
100 points

NAME _____

SECTION _____ Wed 3/1/06

There are 11 problems with 10 points each

1. Find dy/dx: $3 - \ln xy = 2e^{xy}$

2. Find the equation of the tangent line to the curve $y = \dfrac{\tan^{-1} x}{x^2}$ at the point $(1, \pi/4)$.

3. Evaluate: a) $\int_1^4 \frac{e^{\sqrt{x}}}{\sqrt{x}}\,dx$ = _____

b) $\int \frac{3+x}{4-x^2}dx$ = _____

4. Use logarithmic differentiation to find the derivative for $f(x) = \left(\frac{x-2}{x+5}\right)^{\sin x}$

5. Find f '(x): a) $f(x) = \ln \sqrt{\dfrac{x^3 - 1}{\sin x \cos x}}$

b) $f(x) = (3 - \ln \sqrt{x})^3 (2^x - 5^x)$

6. Integrate using trigonometric substitution: $\int \dfrac{\sqrt{9 + x^2}}{x^2} dx$

7. Find the numerical value of each expression.

a) $\cosh^{-1}(0) =$_____ b) $\cosh(\ln 2) =$_____ c) $\log_3 9\sqrt{3} =$_____

d) $e^{(\ln 5 - 2\ln 2)} =$_____ e) $\tan(\arccos(0.3)) =$ _____

8. Find the following limits. Use L'Hospital's Rule where appropriate.

a) $\lim_{x \to 0^+} x^3 \ln x =$_____ b) $\lim_{x \to \infty} \left(\frac{x-2}{x+1} \right)^x =$_____

9. Evaluate using integration by parts:

a) $\int \sec^{-1} t \, dt =$ _____

b) $\int_0^1 e^{3x} \sin 2x \, dx =$ _____