Math 150 Name: _____

QUIZ ON CHAPTER 7

LOG AND EXPONENTIAL FUNCTIONS; MATH 150 – SPRING 2017 – KUNIYUKI
105 POINTS TOTAL, BUT 100 POINTS = 100%

Show all work, simplify as appropriate, and use "good form and procedure" (as in class).
Box in your final answers!
No notes or books allowed. A scientific calculator is allowed.

1) Find the following derivatives. Simplify completely unless you are told not to. Do not use logarithmic differentiation unless you are told to. (59 points total)

a) $D_\theta\left(\ln\left[\cos\left(5\theta\right)\right]\right)$ (5 points)

b) $D_x\left[\log_2\left(x^5+8\right)\right]$ (6 points)

c) $D_x\left[\dfrac{\ln\left(6x^2-x\right)}{5e^{9x}+3}\right]$ (8 points)

You do not have to algebraically simplify, though perform all arithmetic.

d) $D_x\left(\left[\ln\left(2x+1\right)\right]^9\right)$ (5 points)

e) $D_x\left[\dfrac{x^5\sec\left(x\right)}{\left(4x+\pi\right)^9}\right]$ (17 points)

You must use logarithmic differentiation and apply appropriate laws of logarithms whenever they apply, as in class. You do not have to write your final answer as a single fraction.

f) $D_x\left[2^{\ln(x)}\right]$ (6 points)

Answer only is fine, though logarithmic differentiation may help.

g) $D_x\left(x^{2x}\right)$ (12 points)

You must use logarithmic differentiation.

You do not have to write your final answer as a single fraction.

2) Evaluate the following integrals. Simplify completely. (46 points total)

a) $\int_1^2 \left(x^2\right)\left(3^{x^3+1}\right) dx$ (11 points)

Give an exact answer; do not approximate.

b) $\int \frac{9x}{x^2-4} dx$ (8 points)

c) $\int \frac{1}{x\left[\ln\left(x\right)\right]^4}\,dx$ (7 points)

d) $\int \frac{\sec\left(\sqrt{\theta}\right)}{\sqrt{\theta}}\,d\theta$ (10 points)

e) $\int \csc\left(x\right)\,dx$ (4 points)

Answer only is fine.

f) $\int \cot\left(7x\right)\,dx$ (6 points)

Answer only is fine.