Worksheet #8 Answers, September 23, 2015
Math 221 Lecture EL1

Instructions. Put your first and last name at the top of your paper. Everyone is to do their own worksheet but only one from each group is graded with the score shared. Be sure to show your work and explain your reasoning. All worksheets from each group will be collected. This worksheet is two-sided.

1. Differentiate the function $F(x) = 2^{3x^2}$.

Answer : $2^{3x^2}(\ln 2)3x^2(\ln 3)(2x)$

2. Differentiate the function $F(x) = \sin(e^{2x}) + e^{\sin x}$.

Answer : $2e^{2x} \cos(e^{2x}) + e^{\sin(x)} \cos(x)$

3. Differentiate the function $F(x) = \sin(\cot(x))$.

Answer : $-\cos(\cot(x)) \csc^2(x)$.

4. Find $dy/dx$ by implicit differentiation.

$x^4 + y^4 = e$

Answer : $\frac{dy}{dx} = -\frac{x^3}{y^3}$
5. Find \( dy/dx \) by implicit differentiation.

\[ 2x^2 + x + xy = 1 \]

Answer:

\[ \frac{dy}{dx} = -\frac{4x + y + 1}{x} \]