Loyola University Chicago
Math 161, Section 001, Fall 2010

Quiz 3

Name (print): _____ **Signature:** _____

You have 30 minutes. Show your work. Notes not allowed! Problems are on both sides of this sheet.

Problem 1. (9 pts) Find the following derivatives

a. $\dfrac{d}{dx}\left(4\arcsin(5x)\right)$

b. $\dfrac{d}{dy}\left(\left(\ln(3y^5)\right)^8\right)$

c. $\dfrac{dy}{dx}$, in terms of x and y, if

$$xy + \arctan y = 5$$

Problem 2. (5 pts) Use tangent line approximation to estimate $(1.003)^{18}$. *(Simplify your answer!)*

Problem 3. (6 pts) A highway patrol plane flies 3 miles above a level, straight road at a steady 120 miles per hour. The pilot sees an oncoming car and with radar determines that at the instant the line-of-sight distance from plane to car is 5 miles, the line-of-sight distance is decreasing at the rate of 160 miles per hour. Find the car's speed along the highway.