Math 113 Worksheet 4
Implicit Differentiation and Related Rates
October 7, 2008

Instructions: Please give a complete, well-written solution to each of the following problems. The purpose of the worksheets is to develop your ability to formulate and communicate a mathematical argument showing step-by-step reasoning. On page 1 of your solution you should indicate your name and section number. Please give your correct section number to insure that you will receive proper credit for the assignment. Your solutions should be neat and legible, stapled, and your name should appear on each sheet. Write up your work neatly, carefully, and in complete sentences.

Due Date: Your completed solutions are due on Wednesday, October 15, at the beginning of lecture.

1. (4 points) Find all points \((x, y)\) on the curve \(x^2y^2 + xy = 2\) where the slope of the tangent line is \(-1\).

2. (6 points)
   
   (a) (2 points) State the chain rule. Use complete sentences.
   
   (b) (4 points) Illustrate the chain rule by computing the derivative of \(h(x) = f(\cos(x))\) and \(k(x) = \cos(f(x))\) at \(x = \pi\) when \(f'(-1) = 1\), \(f(\pi) = \pi/2\) and \(f'(\pi) = 1\).