

Name: _____

CS401 — Fall 2008 — Assignment 1: Entry Survey

1. Calculate $\frac{d}{dx}f(g(x))|_{x=2}$ where

$$f(x) = \frac{1}{x^2} + \exp(5x^2 + 7)$$
$$g(x) = (x^2 + 1)(x^3 + 1) + x$$

(Please do not use a computer algebra system, e.g., a calculus-enabled calculator. It is fine to use a computer or calculator for arithmetic, of course. Please show your work.)

2. Make and print a nice plot of $\frac{\cos 4x}{1+x^2}$ for $x \in [-10, 10]$.

3. Find the value of x that minimizes $f(x) = (x - 7)^2 + (x - 15)^2$. (Show your work)

4. Suggest a lucrative application of machine learning!

Honor Code: You may discuss these with others, but please write your answers by yourself and without reference to communal notes. In other words, your answers should be *from your own head*.