Math 1071Q Derivative Worksheet (4.1-4.4)

Name:

Problem 1. Use product rule to differentiate the following expressions.

(a) $(x^2 + 2x + 4)(x^3 + 2x)$

(b) $\ln(x)(x^2 + x)$

Problem 2. Use quotient rule to differentiate the following expressions.

(a) $\frac{-3x^8 - x}{e^x + \ln(x)}$

(b) $\frac{e^x - \ln(x)}{e^x + \ln(x)}$

Problem 3. Use chain rule to compute the following expressions.

(a) $e^{x - e^x}$

(b) $\ln\left(e^x - x^2\right)$

(c) $\sqrt[3]{\ln(x)}$

(d) $\left(\frac{x^3+1}{x^3-1}\right)^8$

Problem 4. Use whatever rules you see fit to differentiate the following expressions.

(a) $\frac{\ln(2x)}{x^4}$

(b) $(x^2+x)(x^3+2x)^8$