MATH 133 – Calculus with Fundamentals 1
Quiz 6 – November 5, 2015

Your Name: _____

Directions

Do all work in the space provided below or on the back of the second sheet. There are 30 total points possible. You may use a calculator but not any graphing features.

Questions

(a) (5) State the product rule for differentiating $f(x)g(x)$.

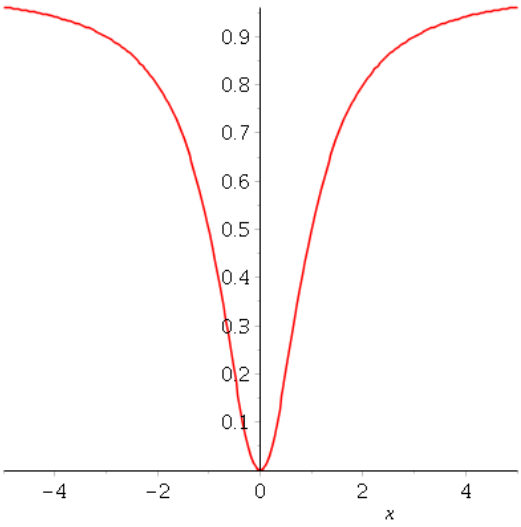
(b) (5) Use the product rule to differentiate $(x^3 + 4x)(e^x - 5x^2)$.

2) (a) (5) Find the derivative using the quotient rule (no simplification needed yet).

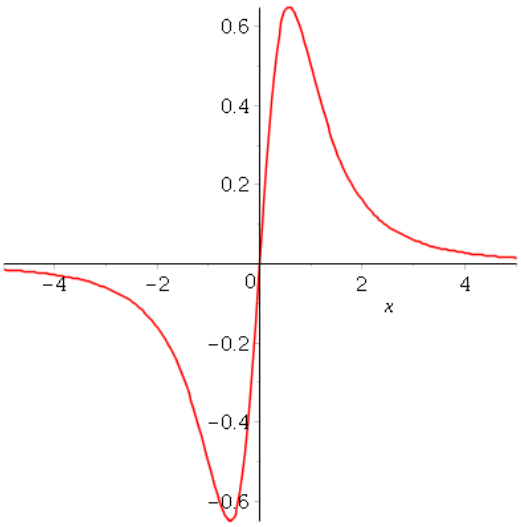
$$f(x) = \frac{x^3 + 2x + 4}{x^{1/2}}$$

(b) (4) It is possible to rewrite $f(x)$ as $f(x) = x^{5/2} + 2x^{1/2} + 4x^{-1/2}$ by dividing the $x^{1/2}$ into each term on the top. Differentiate this form.

(c) (1) Show that your answers in parts (a) and (b) are equivalent by simplifying the answer from (a).



(a) Plot A



(b) Plot B

Figure 1: Plots for Problem 3

3) (a) (6) Differentiate and simplify: $f(x) = \dfrac{x^2}{x^2+1}$

(b) (4) One of the two plots above is $y = f(x)$ and the other is $y = f'(x)$ for the $f(x)$ from part (a). Which is which? Plot A is _____ and Plot B is _____