Sections 6.1-6.3 Worksheet

Name/ Uid:_____ Date:_____

Exercise 1. *Compute the following derivatives:*

(a) $y = \ln(3x^3 + 2x)$

(b) $f(x) = \ln(x + \sqrt{(x^2 + 1)})$

(c) $y = e^{2x^2 - 2x}$

(d) $y = e^{x^3 \ln(x)}$

(e) $f(x) = x^2 e^{2x}$

Exercise 2. *Compute the following integrals:*

(a) $\displaystyle\int \frac{1}{1-2x}\, dx$

(b) $\displaystyle\int \frac{2\ln x}{x}\, dx$

(c) $\displaystyle\int \tan(x)\, dx$

(d) $\displaystyle\int \frac{\cos(x)}{1+\sin(x)}\, dx$

(e) $\displaystyle\int \frac{e^x}{e^x - 1}\, dx$

(f) $\displaystyle\int x e^{x^2-3}\, dx$

Exercise 3. *Use logarithmic differentiation to compute the following*

$$y = \frac{x + 11}{\sqrt{x^3 - 4}}$$

Exercise 4. *Use the Inverse Function Theorem to find* $(f^{-1})'(2)$ *given the function* $f(x) = x^5 + 5x - 4$. *Make sure to check the assumptions before applying the theorem.*