Math 122 Sections 3.3-3.4 Worksheet

Michael Levet

February 15, 2018

Differentiate each function. Clearly show your work.

- $f(x) = x^2(x^3 + 5)$. [Do this in two ways- (1) by using the product rule; and (2) by multiplying through. Do you get the same result? Should you?]
- $f(x) = (2x - 1)(3x + 2)$.
- $f(t) = te^{-2t}$
- $f(t) = \dfrac{t}{e^{2t}}$
- $g(x) = 5x \cdot \exp(x^2)$. [Note: $\exp(u) = e^u$].
- $R(q) = 3qe^{-q}$.
- $f(z) = \sqrt{z}e^{-z}$
- $c(z) = z \log_5(2z^5)$
- $$\log_2(\exp(2^{x^2}))$$
- $w(y) = \dfrac{3y + y^2}{5 + y}$
- $z(t) = \dfrac{1 - t}{1 + t}$
- $y(z) = \dfrac{1 + x}{\ln(x)}$
- $f(x) = (x + 1)^{99}$
- $f(x) = (x^3 + x^2)^{-99}$
- $f(x) = \sqrt[6]{x^3 + 1}$
- $f(x) = \sqrt{2 + \sqrt{x}}$