

Calculus I 201-NYA-05 C3

Quiz 5

October 4, 2008

Name:

Student Number:

1. (10 Marks). Differentiate the following functions:

$$\text{a) } g(x) = (1 + 2 \cos x)(3x^2 + \sin x)$$

$$\begin{aligned} g'(x) &= \frac{d}{dx} [1 + 2 \cos x] (3x^2 + \sin x) + (1 + 2 \cos x) \frac{d}{dx} [3x^2 + \sin x] \\ &= (-2 \cos x)(3x^2 + \sin x) + (1 + 2 \cos x)(6x + \cos x) \end{aligned}$$

$$\text{b) } f(t) = \frac{t^2 + 2}{t^4 - 3t^2 + 1}$$

$$f'(x) = \frac{\frac{d}{dx} [t^2 + 2] (t^4 - 3t^2 + 1) - (t^2 + 2) \frac{d}{dx} [t^4 - 3t^2 + 1]}{(t^4 - 3t^2 + 1)^2}$$

$$= \frac{(2t)(t^4 - 3t^2 + 1) - (t^2 + 2)(4t^3 - 6t)}{(t^4 - 3t^2 + 1)^2}$$