Dawson College: Calculus I: 201-NYA-05-S4: Winter 2012

Name: Y. Lamontagne
Student ID: _____

Quiz 6

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. §3.1 #75 *(2 marks)* Find the derivative of the function f.

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

$$f'(x) = -4x^{-3} - 3\left(\frac{-1}{3}\right)x^{-4/3} = \frac{-4}{x^3} + \frac{1}{x^{4/3}}$$

Question 2. §3.2 #13 *(4 marks)* Find the derivative of the function f.

$$f(x) = (x^2 - 5x + 2)\left(x - \frac{2}{x}\right)$$

$$f'(x) = \frac{d}{dx}\left[(x^2-5x+2)\right]\left(x-\frac{2}{x}\right) + (x^2-5x+2)\frac{d}{dx}\left[\left(x-\frac{2}{x}\right)\right]$$

$$= (2x-5)\left(x-\frac{2}{x}\right) + (x^2-5x+2)\left(1+\frac{2}{x^2}\right)$$

Question 3. §3.2 #25 *(4 marks)* Find the derivative of the function f.

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

$$f'(x) = \frac{\frac{d}{dx}\left[x+1\right](2x^2+2x+3) - (x+1)\frac{d}{dx}\left[2x^2+2x+3\right]}{(2x^2+2x+3)^2}$$

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

Question 4. *(2 marks)* Find the exact value of:

$$\arccos\left(-\frac{\sqrt{3}}{2}\right)$$

see test #1

Question 5. *(3 marks)* Find the indicated limit, if it exists

$$\lim_{x\to -5}\frac{\sqrt{14+x}-3}{x+5}$$

see test #1