Dawson College: Calculus I: 201-NYA-05 S19 October 9, 2012

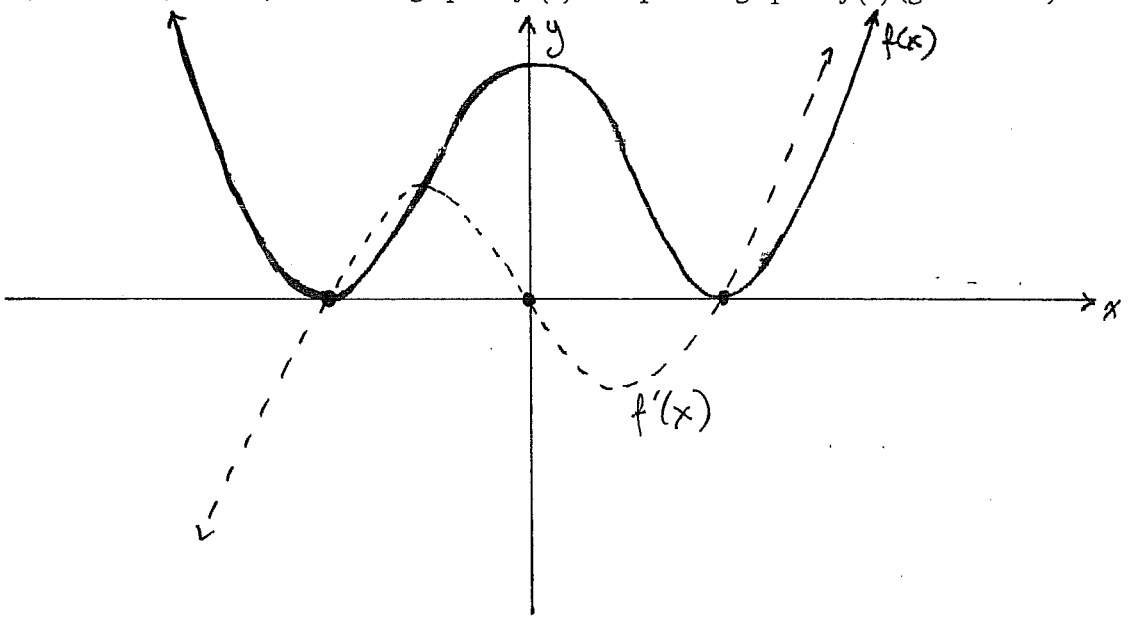
Last Name: SOLUTIONS

First Name: _____

Student ID: _____

Quiz 4

Question 1. *(5 marks)* Sketch the graph of $f'(x)$ on top of the graph of $f(x)$ (given below):



Question 2. *(5 marks)* Find the derivative of the function $G(t) = \frac{1-2t}{3+t}$ using the definition of the derivative (do not change variables).

$$G'(t) = \lim_{h\to 0} \frac{G(t+h) - G(t)}{h} = \lim_{h\to 0} \frac{\frac{1-2(t+h)}{3+(t+h)} - \frac{1-2t}{3+t}}{h} = \lim_{h\to 0} \frac{\frac{1-2t-2h}{3+t+h} - \frac{1-2t}{3+t}}{h}$$

$$= \lim_{h\to 0} \frac{\frac{(1-2t-2h)(3+t) - (1-2t)(3+t+h)}{(3+t+h)(3+t)}}{h} = \lim_{h\to 0}$$

$$\lim_{h\to 0} \frac{3+t-6t-2t^2-6h-2ht-(3+t+h-6t-2t^2-2ht)}{(3+t+h)(3+t)} \cdot \frac{1}{h}$$

$$= \lim_{h\to 0} \frac{3+t-6t-2t^2-6h-2ht-3-t-h+6t+2t^2+2ht}{(3+t+h)(3+t)} \cdot \frac{1}{h}$$

$$= \lim_{h\to 0} \frac{-7}{(3+t+h)(3+t)} = \frac{-7}{(3+t+0)(3+t)} = \frac{-7}{(3+t)^2}$$