NAME: MATH1210-002

# Quiz 4: §2.3 & 2.4

June 27, 2016

**Instructions:** Please show all of your work as partial credit will be given where appropriate, *and* there may be no credit given for problems where there is no work shown. All answers should be boxed and completely simplified, unless otherwise stated. No electronics are allowed.

1. **[8 points each]** Find the derivatives of the following functions (using shortcuts).

   (a) $g(x) = \dfrac{3x^{-2} + x^4 + \pi^4}{x^7 + 3\pi x}$ *DO NOT SIMPLIFY*

   (b) $y = \left(\dfrac{4}{x^4} + 3x\right)\left(5x^2 - \dfrac{1}{x}\right)$ *DO NOT SIMPLIFY*

2. **[8 points]** Find the equation of the tangent line to $y = \frac{1}{x} + 3x^2 - 2$ at $x = -1$. (*Note: You can use derivative shortcuts for this problem.*)

3. **[8 points each]** Find $y'$ for the following functions. *DO NOT SIMPLIFY YOUR ANSWERS*

   (a) $\dfrac{\sin x - \frac{2}{x}}{\pi + \tan x}$

   (b) $\left(x^4 + \cos x\right)\left(x^{-2} - \sec x\right)$