October 13, 2011

Last Name: SOLUTIONS

First Name: _____

Student ID: _____

Quiz 5 (A)

Question 1. Find the derivatives of the following functions:

(a) *(1 marks)* $f(r) = \pi r^2$

$f'(r) = 2\pi r$

(b) *(3 marks)* $f(x) = 2x - 5\sqrt{x}$ $= 2x - 5x^{1/2}$

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

$= 2 - \frac{5}{2}x^{-1/2}$

$= 2 - \frac{5}{2x^{1/2}}$

(c) *(3 marks)* $f(t) = \frac{4}{t^4} - \frac{3}{t^3} + \frac{2}{t}$

$= 4t^{-4} - 3t^{-3} + 2t^{-1}$

$f'(t) = -16t^{-5} + 9t^{-4} - 2t^{-2}$

$= -\frac{16}{t^5} + \frac{9}{t^4} - \frac{2}{t^2}$

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

$f'(x) = 2x - 4 - 3x^{-2}$

$= 2x - 4 - \frac{3}{x^2}$