Dawson College: Calculus II (SCIENCE): 201-NYB-05-S03003: Winter 2013

Name: Y. Lamontagne
Student ID: _____

Quiz 2

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. *(1 mark each)* Integrate the following indefinite integrals:

a.
$$\int \frac{1}{x^{3/5}}\,dx = \int x^{-3/5}\,dx = \frac{5}{2}x^{2/5} + C$$

b.
$$\int \sec x\,dx = \ln|\sec x + \tan x| + C$$

c.
$$\int \cot x\,dx = \ln|\sin x| + C$$

d.
$$\int \frac{1}{x\sqrt{x^2-5}}\,dx = \frac{1}{\sqrt{5}}\operatorname{arcsec}\left(\frac{x}{\sqrt{5}}\right) + C$$

e.
$$\int \frac{1}{x}\,dx = \ln|x| + C$$

f.
$$\int \sin x\,dx = -\cos x + C$$

Question 2. *(4 marks)*§4.7 #34 Find f.

$f''(t) = 2e^t + 3\sin t,\quad f(0) = 0,\ f(\pi) = 0$

$$f'(t) = \int f''(t)\,dt = \int 2e^t + 3\sin t\,dt = 2e^t - 3\cos t + C$$

$$f(t) = \int f'(t)\,dt = \int 2e^t - 3\cos t + C\,dt = 2e^t - 3\sin t + Ct + D$$

$f(0) = 0$
$0 = 2e^0 - 3\sin(0) + C(0) + D$
$-2 = D$

$0 = f(\pi)$
$0 = 2e^{\pi} - 3\sin\pi + C\pi - 2$
$C = \frac{2 - 2e^{\pi}}{\pi}$

$\therefore f(t) = 2e^t - 3\sin t + \frac{(2-2e^{\pi})}{\pi}t - 2$