Dawson College: **Calculus II** (SCIENCE): 201-NYB-05-S10: Winter 2016

Name: _____

Quiz 5

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. *(5 marks)* §5.5 #68 If f is continuous on $\mathbb{R}$, prove that

$$\int_a^b f(x+c)\,dx = \int_{a+c}^{b+c} f(x)\,dx$$

For the case where $f(x) \geq 0$, draw a diagram to interpret this equation geometrically as an equality of areas.

Question 2. *(5 marks)* §6.1 #32a Prove the reduction formula

$$\int \cos^n x\,dx = \frac{1}{n}\cos^{n-1} x\,\sin x + \frac{n-1}{n}\int \cos^{n-2} x\,dx$$

Question 3. *(5 marks)* If $\int_{-9}^{4} -3f(x)+2x+1\ dx = 6\pi - \frac{83}{2}$ and $\int_{-9}^{3} f(x)\ dx = -2\pi - 4$ then determine $\int_{3}^{4} f(x)\ dx$.