Dawson College: **Calculus II**: 201-NYB-05-S3: Fall 2010

Name: _____
Student ID: _____

Quiz 11

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)* A hemispherical tank is filled with liquid chocolate which has a density of $\rho = 1200\frac{kg}{m^3}$. If the tank is $2m$ across the top *(diameter)*, set up the integral that represent the work performed to empty half the tank of chocolate through a pipe that extends $5m$ above the top edge? $\left(g = 9.8\frac{m}{s^2}\right)$

Question 2. §8.1 #5 *(2 marks)* Find a formula for the general term a_n of the sequence, assuming that the pattern of the first few terms continues.

$$\left\{1, -\frac{2}{3}, \frac{4}{9}, -\frac{8}{27}, \ldots\right\}$$

Question 3. §8.1 #19 *(3 marks)* Determine whether the sequence converges or diverges. If it converges, find the limit.

$$\left\{n^2 e^{-n}\right\}$$