

NAME: _____ STU. NO: _____

Wednesday 5 PM, March 28, 2001

MAT 187H1S Quiz 3

Calculus II

Duration: 30 minutes

Only aids allowed for this quiz: a non-programmable calculator.

Instructions: Present your solutions to the following questions on this sheet, using both sides. Make sure to fill in your name and student number at the top of this sheet.

TOTAL MARKS: 20

1. **(5 marks)** Use the Maclaurin series for e^{-x} to find the 5th degree Taylor polynomial of $f(x) = x^2e^{-x}$ about $x = 0$.

2. **(5 marks)** Find the radius of convergence of the power series $\sum_{n=0}^{\infty} \frac{(n!)^2}{(2n)!} x^{2n}$

3. (5 marks) Find the sum of the power series $\sum_{n=0}^{\infty} \frac{1}{n+1} x^n$

4. (5 marks) Use the first three (non-zero) terms of the Maclaurin series for $\cos(x^2)$ to approximate the value of the integral $\int_0^{1/2} \cos(x^2) dx$