MAT 1322 C   <u>**Assignment 5**</u> (Due Wed. March 30th at 17:30)   **Student Number**:

1. Starting from the Maclaurin series for $\dfrac{1}{1-x}$, find the Maclaurin series of (i) $\ln(1+x^2)$ and
(ii) $\displaystyle\int \ln(1+x^2)\,dx$ and give their **intervals** of convergence.

Work:

Answers:

2. Find the Maclaurin series of $f(x) = (1 + x^2)^{2/3}$.

Work:

Answer:

3. Sketch, on the same graph, the level curves of $x^2 - y^2 = C$ for $C = -4, -1, 0, 1, 4$. Indicate the scale on your axes and label the contours.

Answer:

4. Find all first and second partial derivatives of the functions.

(a) $f(x, y) = 2x^2 y^3 + 3x - \ln y$ 　　　　(b) $g(r, \theta) = r^2 \cos(3\theta) - e^{3r}$ 　　　　(c) $f(x, t) = 3x \cos(2t^2 - 4)$

Work and Answers: