

Serial No.: _____ Student Name: _____ Student Number: _____

Instructor: M. Z. Abu-Sbeih

Math 102- Q5

Date: 6-6-2009

Show all your work. No credits for answers not supported by work. Name any test you use.1. Determine the **radius** and **interval** of convergence of the series:

$$\sum_{n=0}^{\infty} \frac{(2x + 5)^n}{(n^2 + 1) 3^n}$$

2. For a series representation of $f(x) = \frac{1}{2+x}$ in powers of $(x - 1)$, and find the **radius** of convergence.

3. Find the sum of the series

$$\sum_{n=1}^{\infty} \frac{n}{3^n}$$

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