

Scoring Grid (teacher use only):

	1	2	3	4	5	Totals (not an average)
Implementing Mathematical Processes						
Connecting Representations						
Justification						
Communication and Notation						

1. Consider the Maclaurin series for $f(x) = \cos x$

a) [IMP] Use the first two terms of the Maclaurin series to approximate $\cos\left(\frac{1}{2}\right)$

b) [CR] Find the Alternating Series error bound for your answer from part (a).

2. [J, CN] Find the interval of convergence for $\sum_{n=1}^{\infty} \frac{(x-3)^n}{n^2}$. Clearly show all your work (and justify with tests) to earn full credit.

3. Consider the Taylor series for $f(x) = \frac{1}{1-\frac{x^2}{4}}$ centered at $x = 0$.

a) [CR] Write the first four terms of the series.

b) [J, CN] Determine the interval of convergence for this series. Clearly show all your work (and justify with tests) to earn full credit.

c) [CR] What is the radius of convergence for this series?

4. [IMP] Find a 2nd degree Taylor polynomial for $f(x) = \sqrt{x+1}$ centered at $x = 3$.

5. [IMP, J] Find the Lagrange error bound for the approximation of $\sqrt{e}$ using a 3rd degree Maclaurin polynomial of $f(x) = e^x$.