

Exam III

Name _____

1. Determine the Maclaurin Series for $f(x) = \frac{5}{3-x}$.

2. Determine the Maclaurin Series for $g(x) = \frac{1}{(3-x)^2}$.

3. Determine the Maclaurin Series for $h(x) = \ln(3-x)$.

4. Determine the Maclaurin Series for $f(x) = \frac{1}{\sqrt{3-x}}$.

5. (a) Determine the function for the series $\sum_{n=0}^{\infty} \frac{2 \cdot x^n}{3^n}$.

(b) What is the interval of convergence? _____

6. Determine the Maclaurin Series for $f(x) = \cos x$. You **must** show how you got this answer.

7. Determine the Maclaurin Series for $h(x) = \cos 2x$.

8. Determine the sum of the series $\sum_{n=0}^{\infty} \frac{2^n}{n!}$.

9. Use power series to solve the differential equation $y' - xy + 2 = 0$ such that $y(0)=1$. You need only go to the fifth degree of $y(x)$. (Extra 3 points to put into sum notation.)

Bonus: Write $f(x) = \ln(4 + x)$ as a Maclaurin Series.