

Name: _____

1. Use the binomial series to expand the function $(1 - x)^{2/3}$ as a power series. The radius of convergence is 1. The interval of convergence is $[-1, 1]$.

2. Use a Maclaurin series from the table on the LP to obtain the Maclaurin series for the function $f(x) = e^x + 2e^{-x}$.

3. Use series to approximate the definite integral to within three decimal places.

$$\int_0^1 x \cdot \cos(x^3) dx$$

4. Use division of power series to find the first three nonzero terms in the Maclaurin series for the function $y = \frac{\cos(x)}{e^{x^2}}$.

5. Find the sums for the following series.

a. $\sum_{n=1}^{\infty} (-1)^{n-1} \frac{3^n}{n5^n}$

b. $\sum_{n=0}^{\infty} \frac{(-1)^n \pi^{2n}}{6^{2n} (2n)!}$