

1. Find the Maclaurin Series for

a) $\sin x^2$

b) $x \cos \sqrt{x}$

c) $\tan^{-1} x$

d) $\ln(1 + x)$

e) $\frac{1}{4 + 7x}$

f) $\frac{x}{1 - x}$

g) $\frac{e^x - 1}{\sqrt{x}}$

2. Determine the error in computing the first three terms of

a) $\int_0^{1/2} e^{-x^2} dx$

b) $\int_0^{.3} \sin \sqrt{x} dx$

c) $\int_0^1 \tan^{-1} x^2 dx$

3. How many terms do you need to take for the error to be less than 10^{-5} for each of the following?

a) $\int_0^{1/2} e^{-x^2} dx$

b) $\int_0^1 \cos \sqrt{x} dx$

c) $\int_0^{.2} \tan^{-1} x^2 dx$

4. Find the radius of convergence and interval of convergence for

a) $\sum_1^{\infty} \frac{(2x + 3)^n}{7^n n^2}$

b) $\sum_1^{\infty} \frac{n(3x - 4)^n}{5^n}$

c) $\sum_1^{\infty} \frac{(2x - 7)^n}{n!}$

d) $\sum_1^{\infty} n!(4x + 5)^n$