

1. Find a power series representation for each of the following functions and its interval of convergence.
(Continued on the next page.)

(a) $f(x) = \frac{1}{3 + 5x}$

(b) $f(x) = \frac{x^2}{1 + x^2}$

(c) $f(x) = x^3 e^{-x^2}$

(d) $f(x) = \ln(1 - x)$

(e) $f(x) = \tan^{-1}(\sqrt{x})$

2. Do #36 in section 11.7.

3. Use an infinite series to approximate the following definite integrals to four significant digits.

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

(b) $\int_0^{.2} \frac{x^3}{1+x^5} dx$