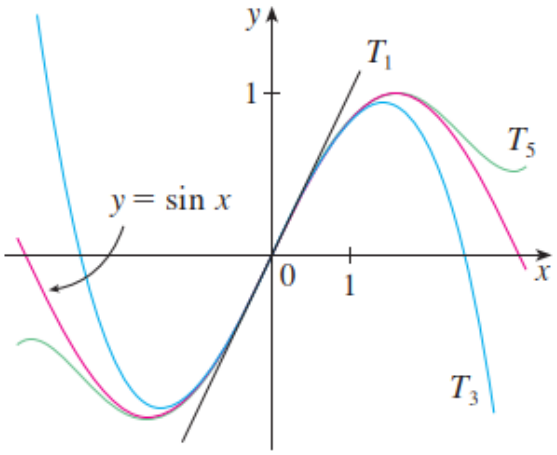
MATH 147 Review: Taylor Series and Radius of Convergence

Facts to Know

The Taylor Series of a function $f(x)$ centered at a

$$f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!}(x-a)^n$$
$$=$$



$T_1(x) = x$

$T_3(x) = x - \frac{x^3}{3!}$

$T_5(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!}$

Examples

1. Find the Taylor Series of the function $f(x) = e^x$ centered at 0.

2. Find the Taylor Series of the function $f(x) = \ln(x)$ centered at 1.

3. Find the Taylor Series of the function $f(x) = \frac{1}{1-x}$ centered at 0.

4. Find the Taylor Series of the function $f(x) = \frac{1}{(1-x)^2}$ centered at 0.