§8.7: Taylor Series

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Key Points:

- The Taylor Series for $f(x)$ centered at $x = a$ is given by

- If $f(x)$ has a power series representation, then it is the Taylor Series.
- A Taylor Series centered at $x = 0$ is also called a MacLauren Series.

Examples:

1. Find the Taylor Series for $f(x) = e^x$ about $x = 0$

2. Find the Taylor Series for $f(x) = \sin(x)$ about $x = 0$

3. Find the Taylor Series for $f(x) = \cos(x)$ about $x = 0$

4. Find the Taylor Series for for $f(x) = \ln(1 + x)$ about $x = 0$

5. Evaluate $\int \frac{e^x - 1}{x}\, dx$ using infinite Series.