

Sections 30.2/30.3/30.4 : Maclaurin Series

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11:08 AM

Maclaurin series for e^x :

- suppose we have some function $f(x)$ and we'd like to
 - estimate its value quickly
 - or
 - integrate it but $f(x)$ is nasty to integrate!

→ workaroud:
approximate $f(x)$ by a polynomial

$$f(x) = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \dots$$

power series expansion

but what are the constants?

→ it turns out (we'll show later)

$$f(x) = f(0) + \frac{f'(0)}{1!} x + \frac{f''(0)}{2!} x^2 + \frac{f'''(0)}{3!} x^3 + \dots$$

definition of a Maclaurin series

linearization from Math 185