



Ways to approximate

- Linearization
- Euler's Method

Taylor Series to approximate?

Consider a function with the following conditions

-  $f(0) = 1$

-  $f'(x) = 3x^2$

-  $f''(x) = 6x$

-  $f'''(x) = 6$

$f'(1) = 3$

$f''(1) = 6$

$f'''(1) = 6$

$$f(x) \approx 1 + \frac{3(x-1)}{1} + \frac{6(x-1)^2}{2!} + \frac{6(x-1)^3}{3!}$$

Lagrange error bound?

$$1 + 3(0.2) + \frac{6(0.2)^2}{2!} + \frac{6(0.2)^3}{3!}$$

$$1 + 0.6 + 0.12 + 0.008$$

$$1.128$$

$$1 + 12 + 3.16 + 64$$