Pract3

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Subject : Scientific Writing and Computational Analysis Tools
Course : Masters of Computer Science

February 22, 2026

1.

$$f(x) = f(a) + f'(a)(x-a) + \frac{f^n(a)}{2!}(x-a)^2 + \frac{f^{(3)}(a)}{3!}(x-a)^3 + \cdots + \frac{f^{(n)}(a)}{n!}(x-a)^n + R_n,$$

2.

$$R_n = \frac{f^{(n+1)}(\xi)}{(n+1)!}(x-a)^{(n+1)}$$

3.

$$f(x) = \frac{a_0}{2} + \sum_{x=1}^{\infty} [a_n \cos(\frac{n\pi x}{L}) + b_n \sin(\frac{n\pi x}{L})]$$

4.

$$\rho(\frac{\partial v}{\partial t} + (v \cdot \nabla)v) = -\nabla p + \mu \nabla^2 v + \mathrm{f}$$

5.

$$\det(A) = \sum_{\sigma \in S_n} \mathrm{sgn}(\sigma) \prod_{i=1}^{n} a_{i,\sigma(i)}$$

6.

$$\det(I + \lambda K) = \sum_{n=0}^{\infty} \frac{\lambda^n}{n!} \int \cdots \int \det[K(x_i, x_j)]_{i,j=1}^n dx_1 \ldots dx_n$$

7.

$$f(x) = \begin{cases} x^2 + 1, & x > 0, \\ \det(A - xI), & x \le 0 \text{ and } A \in \mathbb{R}^{n \times n}, \\ \int_0^x t^3 dt, & x \in \mathbb{R}. \end{cases}$$