Assignment 3 Due date: 2 November 2023 TA: 鄒冠勳 E814

- 1. (30%) Compute the derivative f'(x) for $f(x) = \ln(x^4) \sin(x^3)$, where $\ln(x) = \log_e(x)$.
- 2. (30%) Compute the derivative f'(x) of the logistic sigmoid

$$f(x) = \frac{1}{1 + \exp(-x)}.$$

3. (30%) Compute the derivative f'(x) of the function

$$f(x) = \exp\left(-\frac{1}{2\sigma^2}(x-\mu)^2\right),\,$$

where $\mu, \sigma \in \mathbb{R}$ are real constants.