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.