

$$f(x) = x \ln x$$

$$u = x \quad v = \ln x$$

$$u' = 1 \quad v' = \frac{1}{x}$$

$$\begin{aligned} f'(x) &= 1 \cdot \ln x + x \cdot \frac{1}{x} \\ &= \ln x + 1 \end{aligned}$$