Integration
$\int \log x \, dx$ (integrating $\log x$ with respect to x)
$\int \log x \, dx = \int \log x \cdot 1 \, dx$
$= \int \log x \cdot \frac{d}{dx}(x) \, dx$
$= \int \frac{d}{dx}(\log x) \cdot x \, dx$
$= x \log x - \int x \cdot \frac{1}{x} \, dx$
$= x \log x - \int 1 \, dx$
$= x \log x - x + C$

$\int_0^1 (x \log x) \, dx$
$= \left[x \log x - x \right]_0^1$
$= (1 \log 1 - 1) - (0 \log 0 - 0)$
$= (0 - 1) - (0 - 0)$
$= -1$

$\int_0^1 (x \log x) \, dx$ $\quad$ $\lim_{x \to 0} x \log x$
$= \int_0^1 (x \log x) \, dx$ $\quad$ $\lim_{x \to 0} \frac{\log x}{\frac{1}{x}}$
$= \int_0^1 (x \log x) \, dx$ $\quad$ $\lim_{x \to 0} \frac{\frac{1}{x}}{-\frac{1}{x^2}}$
$= \int_0^1 (x \log x) \, dx$ $\quad$ $\lim_{x \to 0} -x$
$= \int_0^1 (x \log x) \, dx$ $\quad$ 0

$\int_0^1 (x \log x) \, dx$
$= \int_0^1 (x \log x) \, dx$
$= \int_0^1 (x \log x) \, dx$
$= \