

$$\begin{aligned}
 \int_a^b g'(x) \cdot h(x) dx &= [g(x) \cdot h(x)]_a^b - \int_a^b g(x) \cdot h'(x) dx \\
 \int_1^2 x \cdot \ln(x) dx &= \left[\frac{1}{2} x^2 \cdot \ln(x) \right]_1^2 - \int_1^2 \frac{1}{2} x^2 \cdot \frac{1}{x} dx \\
 \int_1^2 x \cdot \ln(x) dx &= \left[\frac{1}{2} x^2 \cdot \ln(x) \right]_1^2 - \left[\frac{1}{4} x^2 \right]_1^2 \\
 &= \left[\frac{1}{2} x^2 \cdot \ln(x) - \frac{1}{4} x^2 \right]_1^2 \\
 &= 2 \cdot \ln(2) - 1 + \frac{1}{4} \\
 &= 0,64
 \end{aligned}$$