Evaluate $\int x\log\, xdx$.

Answer: $\int x\log\, xdx$

$$= \log\, x\{\int\, xdx\} - \int\, \left\{\frac{d}{dx}(\log\, x)\int\, xdx\right\}dx$$

$$= (\log\, x)\frac{x^2}{2}\int\, \frac{1}{x}\frac{x^2}{2}dx$$

$$= \frac{x^2}{2}\log\, x - \frac{1}{2}\int\, xdx$$

$$= \frac{x^2}{2}\log x - \frac{1}{2}\left(\frac{x^2}{2}\right) + C = \frac{x^2}{2}\log\, x - \frac{1}{4}x^2 + C$$