$$\int u\,dv = u\cdot v - \int v\,du$$

$$\int \frac{\ln\sqrt{x}}{\sqrt{x}}\,dx$$

$$\int \frac{\ln\sqrt{x}}{\sqrt{x}}\,dx = \left\| \begin{array}{l} u = \ln\sqrt{x} \;;\; du = \frac{1}{2x}\,dx \\ dv = \frac{1}{\sqrt{x}}\,dx \;;\; v = 2\sqrt{x} \end{array} \right\| = \circledast$$

$(*_1)$

$(*_2)$

$$(*_1)\ \frac{d}{dx}(\ln\sqrt{x}) = \frac{\frac{1}{2\sqrt{x}}}{\sqrt{x}} = \frac{1}{2x}$$

$$\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a\cdot d}{b\cdot c}$$

$$\int f'(x)\cdot f^n(x)\,dx = \frac{f^{n+1}(x)}{n+1} + C \qquad n \neq -1$$

$$(*_2)\ \int \frac{1}{\sqrt{x}}\,dx = \int \frac{1}{x^{1/2}}\,dx = \int x^{-1/2}\,dx = \frac{x^{1/2}}{1/2} = 2\sqrt{x}.$$

$$\circledast = 2\sqrt{x}\ln\sqrt{x} - \int 2\sqrt{x}\cdot\frac{1}{2x}\,dx =$$

$$= 2\sqrt{x}\ln\sqrt{x} - \int \frac{1}{\sqrt{x}}\,dx = 2\sqrt{x}\ln\sqrt{x} - 2\sqrt{x} + C$$