① $\int \sqrt{x} \ln x \, dx = \int x^{\frac{1}{2}} \ln x \, dx =$ $\left| \begin{array}{ll} u = \ln x & u' = \frac{1}{x} \\ v' = x^{\frac{1}{2}} & v = \frac{x^{\frac{3}{2}}}{\frac{3}{2}} = \frac{2}{3} x^{\frac{3}{2}} \end{array} \right|$

$= \ln x \cdot \frac{2}{3} x^{\frac{3}{2}} - \int \frac{1}{x} \cdot \frac{2}{3} x^{\frac{3}{2}} \, dx =$

$= \ln x \cdot \frac{2}{3} x\sqrt{x} - \frac{2}{3} \int x^{\frac{1}{2}} \, dx =$

$= \frac{2}{3} x\sqrt{x} \ln x - \frac{2}{3} \frac{x^{\frac{3}{2}}}{\frac{3}{2}} =$

$= \frac{2}{3} x\sqrt{x} \ln x - \frac{4}{9} x\sqrt{x} + c =$

$= \frac{2}{3} x\sqrt{x} \cdot \left(\ln x - \frac{2}{3} \right) + c$