



$$\begin{aligned}
 A: \quad \frac{-1}{x} &= \frac{1}{2x+6} \rightarrow \boxed{x=-2} \\
 \int_{-2}^{-1} \left(-\frac{1}{x} - \frac{1}{2x+6} \right) dx &= -\ln|x| - \frac{\ln|2x+6|}{2} \Big|_{-2}^{-1} = \\
 -\ln 1 + \ln 2 - \frac{\ln 4}{2} + \frac{\ln 2}{2} &= \ln 2 - \frac{\ln 2^2}{2} + \frac{1}{2} \ln 2 \\
 = \cancel{\ln 2} - \frac{2}{2} \ln 2 + \frac{1}{2} \ln 2 &= \ln 2^{\frac{1}{2}} = \ln \sqrt{2}
 \end{aligned}$$