

$$\int_3^8 \frac{1}{\sqrt{8-x}} dx = \lim_{t \rightarrow 8^-} \int_3^t \frac{1}{\sqrt{8-x}} dx$$

$$\begin{array}{l} \text{Indef} \int \frac{1}{\sqrt{8-x}} dx \\ \downarrow \end{array} \quad \begin{array}{l} u = 8-x \quad du = -dx \\ y = -\int u^{-1/2} du = -\frac{u^{1/2}}{1/2} + C = -2\sqrt{u} + C = -2\sqrt{8-x} + C \end{array}$$

$$= \lim_{t \rightarrow 8^-} \left(-2\sqrt{8-t} - (-2\sqrt{8-3}) \right)$$

$$= -2\sqrt{0} + 2\sqrt{5}$$

$$= 2\sqrt{5}$$