

Uneigentliche Integral 8.6

3)

$$\int_0^1 \frac{dx}{\sqrt{x}}$$

Problem: rechteckig unendlich hoch & unendlich dünn

$$\begin{aligned} &= \lim_{a \rightarrow 0^+} \int_a^1 x^{-\frac{1}{2}} dx = \lim_{a \rightarrow 0^+} \left. \frac{x^{\frac{1}{2}}}{\frac{1}{2}} \right|_a^1 = \frac{1}{\frac{1}{2}} - \lim_{a \rightarrow 0^+} 2\sqrt{a} \\ &= 2 - 0 \end{aligned}$$

$$\begin{aligned} 5) &= \left. \frac{x^{\frac{4}{3}}}{\frac{4}{3}} \right|_{-1}^1 = 3 \cdot 1 - (3 \cdot (-1)) = \underline{\underline{6}} \end{aligned}$$

