Uneigentliche Integral 8.6

3)

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

Problem: rechteck unendlich hoch & unendlich breit

$$= \lim_{a \to 0^+} \int_a^1 x^{-\frac{1}{2}}\, dx = \lim_{a \to 0^+} \frac{x^{\frac{1}{2}}}{\frac{1}{2}} \Bigg|_a^1 = \frac{1}{\frac{1}{2}} - \lim_{a \to 0^+} 2\sqrt{a}$$

$$= 2 - 0$$

5)

$$= \frac{x^{\frac{1}{3}}}{\frac{1}{3}} \Bigg|_{-1}^{1} = 3 \cdot 1 - (3 \cdot (-1)) = 6$$