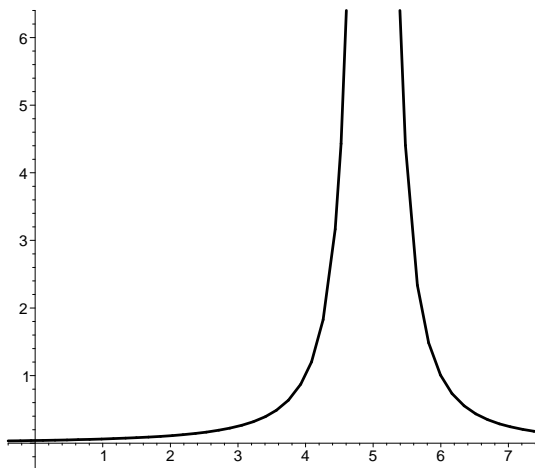


Aufgabe 13.99

Berechnen Sie $\int_4^7 \frac{dx}{(x-5)^6}$!

Lösung:



Es gilt $\lim_{x \rightarrow 5 \pm 0} \frac{1}{(x-5)^6} = \infty$. Also ist

$$\begin{aligned} \int_4^7 \frac{dx}{(x-5)^6} &= \int_4^5 \frac{dx}{(x-5)^6} + \int_5^7 \frac{dx}{(x-5)^6} \\ &= -\frac{1}{5} \frac{1}{(x-5)^5} \Big|_4^5 - \frac{1}{5} \frac{1}{(x-5)^5} \Big|_5^7 \\ &= -\frac{1}{5}(-\infty) + \frac{1}{5}(-1) - \frac{1}{5} \frac{1}{32} + \frac{1}{5} \infty \\ &= \underline{\underline{\infty}}. \end{aligned}$$