

Oppgave 13

Skriver om, bruker l'Hopitals regel, multipliserer med $x^{\frac{1}{2}}$, og foretar en grenseverdibetrakting;

$$\begin{aligned}\lim_{x \rightarrow 0^+} \left(\frac{1}{\sqrt{x}} - \frac{1}{\sin x} \right) &= \lim_{x \rightarrow 0^+} \frac{\sin x - \sqrt{x}}{\sqrt{x} \sin x} \\&= \lim_{x \rightarrow 0^+} \frac{\cos x - \frac{1}{2}x^{-\frac{1}{2}}}{x^{\frac{1}{2}} \cos x + \frac{1}{2}x^{-\frac{1}{2}} \sin x} \\&= \lim_{x \rightarrow 0^+} \frac{2x^{-\frac{1}{2}} \cos x - 1}{2x \cos x + \sin x} \\&= -\infty\end{aligned}$$