Analyse I Huiswerk

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1. a)

   b)

$$\begin{aligned}
\lim_{x\to-\infty} \sqrt{x^2+x+4}+x &= \lim_{t\to\infty} \sqrt{t^2-t+4}-t \\
&= \lim_{t\to\infty} \frac{(\sqrt{t^2-t+4}-t)(\sqrt{t^2-t+4}+t)}{\sqrt{t^2-t+4}+t} \\
&= \lim_{t\to\infty} \frac{\cancel{t^2}-t+4-\cancel{t^2}}{\sqrt{t^2-t+4}+t} \\
&= \lim_{t\to\infty} \frac{\frac{-t}{t}+\frac{4}{t}}{\sqrt{\frac{t^2}{t^2}-\frac{t}{t^2}+\frac{4}{t^2}}+\frac{t}{t}} \\
&= \frac{-1+0}{\sqrt{1+0+0}+1} = \boxed{-\frac{1}{2}}
\end{aligned}$$