Es gilt:

$$\lim_{k\to\infty}\left(\sqrt{k+1}-\sqrt{k}\right)$$

$$\sqrt{k+1}-\sqrt{k}$$

$$\sqrt{k+1}+\sqrt{k}$$

$$(\sqrt{k+1}+\sqrt{k})$$

$$\lim_{k\to\infty}\left(\sqrt{k+1}-\sqrt{k}\right)=\lim_{k\to\infty}\left(\frac{\sqrt{k+1}-\sqrt{k}}{\sqrt{k+1}+\sqrt{k}}\cdot\left(\sqrt{k+1}+\sqrt{k}\right)\right)$$

$$\begin{aligned}\lim_{k\to\infty}\left(\sqrt{k+1}-\sqrt{k}\right)&=\lim_{k\to\infty}\left(\frac{\sqrt{k+1}-\sqrt{k}}{\sqrt{k+1}+\sqrt{k}}\cdot\left(\sqrt{k+1}+\sqrt{k}\right)\right)\\&=\lim_{k\to\infty}\left(\frac{(k+1)-k}{\sqrt{k+1}+\sqrt{k}}\right)\\&=\lim_{k\to\infty}\left(\frac{1}{\sqrt{k+1}+\sqrt{k}}\right)\\&=0\end{aligned}$$