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Given:

$$\frac{(n+1)^{\sqrt{n+1}}}{n^{\sqrt{n}}}$$

Solution:

$$\begin{aligned} 1) \lim_{n \rightarrow \infty} \frac{(n+1)^{\sqrt{n+1}}}{n^{\sqrt{n}}} &= \lim_{n \rightarrow \infty} \frac{n^{\sqrt{n+1}} + \dots}{n^{\sqrt{n}}} = \lim_{n \rightarrow \infty} n^{\sqrt{n+1} - \sqrt{n}} = \lim_{n \rightarrow \infty} n^{\frac{(\sqrt{n+1} - \sqrt{n})(\sqrt{n+1} + \sqrt{n})}{\sqrt{n+1} + \sqrt{n}}} = \\ &= \lim_{n \rightarrow \infty} n^{\frac{n+1-n}{\sqrt{n+1} + \sqrt{n}}} = \lim_{n \rightarrow \infty} n^{\frac{1}{\sqrt{n+1} + \sqrt{n}}} = 1 \end{aligned}$$

$$2) \lim_{n \rightarrow 0} \frac{(n+1)^{\sqrt{n+1}}}{n^{\sqrt{n}}} = \lim_{n \rightarrow 0} \frac{1}{\sqrt[n]{n}} = \lim_{n \rightarrow 0} \sqrt[n]{n} = 1$$

Answer: $\lim_{n \rightarrow \infty} \frac{(n+1)^{\sqrt{n+1}}}{n^{\sqrt{n}}} = 1$

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