# 28.7

Apply the limit comparison test: evaluate $\lim \frac{a(n)}{b(n)}$ with $b(n) = n^{n+1/n}$, $a(n) = \frac{1}{n}$:

$$\lim \frac{n^{(n+1)/n}}{n} = \lim \frac{n \cdot n^{1/n}}{n} = \lim n^{1/n}$$

Let some $y = n^{1/n}$; then

$$\log(y) = \frac{\log(n)}{n} \;\&\; \lim \frac{\log(n)}{n} = 0 = \lim(\log(y))$$

Thus;

$\lim(\log(y)) = 0 \Rightarrow \lim(y) = 1$ by power intuitions

Since the ration $r \neq 0$ and $\frac{1}{n}$ diverges, then

$\sum_{n=1}^{\infty} \frac{1}{n^{\frac{n+1}{n}}}$ diverges.