The function $f(x) = \frac{5}{\sqrt[5]{x}} = 5x^{-1/5}$ is continuous, positive, and decreasing on $[1, \infty)$, so the Integral Test applies.
$\int_1^\infty 5x^{-1/5}\,dx = \lim_{t\to\infty} \int_1^t 5x^{-1/5}\,dx = \lim_{t\to\infty} 5\left[\frac{5}{4}x^{4/5}\right]_1^t = \lim_{t\to\infty} 5\left(\frac{5}{4}t^{4/5} - \frac{5}{4}\right)$
$= \infty$, so $\sum_{n=1}^{\infty} \frac{5}{\sqrt[5]{n}}$ diverges.