Proposition 0.0.1.

$$\begin{aligned} lim_{n\to\infty}\frac{1}{n^k} &= 0 \qquad \textit{for any } k > 0. \\ &\iff |\frac{1}{n^k} - 0| < \epsilon, \epsilon > 0, n > N \in \mathcal{N} \\ &\iff \frac{1}{n^k} < \epsilon \qquad \textit{since } n^k > 0 \end{aligned}$$