Some Special Sequences

Let $x, \alpha, p \in \mathbb{R}$ be given.

(i) If $p > 0$ then $\frac{1}{n^p} \to 0$ as $n \to \infty$.

(ii) If $p > 0$ then $\sqrt[n]{p} \to 1$ as $n \to \infty$.

(iii) $\sqrt[n]{n} \to 1$ as $n \to \infty$.

(iv) If $p > 0$ then $\frac{n^\alpha}{(1+p)^n} \to 0$ as $n \to \infty$.

(v) If $|x| < 1$, then $x^n \to 0$ as $n \to \infty$.