$\forall \varepsilon>0$, $\exists N$, 当 $n \geq N$ 时

$|f_n(x)| < \varepsilon \quad \forall x \in [0,\infty)$.

$\exists N>0$, s.t. $n>N$时

$|f_n(x)| = \left|\frac{x}{1+x^n}\right| < \varepsilon \quad \forall x \in [0,\infty)$

$\frac{x}{1+x^n} \geq 0$, $\frac{1+x^n - nx^n}{(1+x^n)^2} = 0$

$\Rightarrow x^n = \frac{1}{n-1}$

$x =$

$\frac{x}{1+x^N}$ $\qquad \frac{x}{1+x^2}$

$(N-1)^{\frac{1}{N}}$

$\frac{(N-1)^{\frac{1}{N}}}{N}$ $\qquad \frac{x}{1+x^n} = \frac{x}{1+\frac{1}{n-1}} = \frac{x(n-1)}{n}$

$\frac{(n-1)^{1-\frac{1}{n}}}{n}$ $\qquad \frac{\sqrt{2}}{2}$

$e^x \geq 1+x$

$\frac{(N-1)^{1-\frac{1}{N}}}{N}$

$e^{\frac{1}{N}\ln(N-1)}$

$\geq 1+\frac{1}{N}\ln(N-1)$ $\qquad (n-1)^{1-\frac{1}{n}}$

$(1-\frac{1}{n})\cdot(n-1)^{-\frac{1}{n}} - (n-1)^{1-\frac{1}{n}}$

$$\frac{[illegible]}{h^2}$$