§1 Tutorial 10-30

§1.1 e

Example 1.1

1. $$\lim(1-\frac{1}{n})^{-n}=e$$

2. $$(1+\frac{1}{2n})^{n}=((1+\frac{1}{2n})^{2n})^{\frac{1}{2}}=(e)^{\frac{1}{2}}$$

   Because $(1+\frac{1}{2n})$ is a subsequence of $(1+\frac{1}{n})$ which converges to e.

3. $(1+\frac{n}{2})^{\frac{n}{2}}$ is <u>not</u> a subsequence of $(1+\frac{1}{n})^{n}$. It's the other way around.

Let $a>0$. Pick $x_1>0$. Let $x_{n+1}=\frac{1}{2}(x_n+\frac{a}{x_n})>0$

Prove that $x_n\to\sqrt{a}$.