9.2.1 We can take the limit as $n \to \infty$ of $f_n(x)$:

$$\lim_{n\to\infty} f_n(x) = \lim_{n\to\infty} \frac{x^n}{1+x^n} = \lim_{n\to\infty} \frac{x^n}{1+x^n}\frac{x^{-n}}{x^{-n}} = \lim_{n\to\infty} \frac{1}{x^{-n}+1} = \frac{1}{0+1} = 1$$

Thus this sequence of functions coverges pointwise to 1 for all x. ■

9.2.2 We can see that following:

$$L := \lim_{n\to\infty} n\left(\sqrt[n]{x}-1\right) = \lim_{n\to\infty} \frac{1}{n^{-1}}\left(\sqrt[n]{x}-1\right) = \lim_{n\to\infty} \frac{\sqrt[n]{x}-1}{n^{-1}}$$

Thus

$$L = \lim_{n\to\infty} \frac{}{-n^{-2}}$$