4.1 The Error Term

- It is an important practical matter to know not just that a sequence $\{a_n\}$ converges to a limit L, but also to have some idea of how rapidly it converges to L

Error Term:

- measures how far away a_n is from its limit

$$e_n = a_n - L$$

Error-Form Principle:

- Let $a_n = L + e_n$, then $a_n \to L \iff e_n \to 0$

4.2 The Error in the Geometric Series. Application.

4.3 A Sequence Converging to $\sqrt{2}$: Newton's Method

Newton's Method:

- a numerical method for locating a zero α of a given function $f(x)$ to any accuracy desired

$$f'(a_n) = \frac{f(a_n)}{a_n - a_{n+1}}, \quad a_{n+1} = a_n - \frac{f(a_n)}{f'(a_n)}$$

4.4 The Sequence of Fibonacci Fractions