**Example.** Consider the initial-value problem

\[ y' = f(t, y), \quad a < t < b, \quad y(a) = \alpha \]

and the corresponding (explicit) single-step method

\[ w_n = w_{n-1} + h\phi(t_{n-1}, w_{n-1}, h), \quad n = 1, 2, \ldots, N, \quad w_0 = \alpha \]

where \( t_n = a + nh \) and \( h = (b - a)/N \). Determine the leading behavior of the truncation error as \( h \to 0 \) for the following methods.

(a) Euler’s method:

\[ \phi(t, w, h) = f(t, w) \]

(b) Explicit trapezoidal method:

\[ \phi(t, w, h) = \frac{1}{2}f(t, w) + \frac{1}{2}f(t + h, w + hf(t, w)) \]