

Leapfrog scheme

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Exercise 17

We want to analyze the Leapfrog scheme by looking at the exact solution of the discrete equation. We consider the case where a is constant and $b = 0$, giving

$$u'(t) = -au(t), \quad u(0) = I \tag{1}$$

where I is some initial condition. We assume that the exact solution of the discrete equations is on the form

$$u^n = A^n \tag{2}$$