17. Event handling for ODEs. Use computation of the period in the Lotka-Volterra system in Exercise 7.15 to illustrate the method.

Numerical Analysis E2021

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Event handling

- Used to the assumption that the `tspan` interval, $t_0 \leq t \leq t_{final}$, is a given part of the problem specification.
- In many situations, the determination of t_{final} is an important aspect of the problem.
- *Examples:* Two-body problem, Lotka-Volterra model.
- Events detection in ODEs involves functions, $f(t,y)$ and $g(t,y)$, and an initial condition, (t_0, y_0).
- Find a function $y(t)$ and a final value t_* so that

$$y' = f(t,y), \quad y(t_0) = y_0, \quad g(t_*, y(t_*)) = 0.$$

MATLAB demo of exercise 7.15.