

# MATLAB's `ode45` Function

A Quick Review

# ode45

- `ode45`: One of MATLAB's built-in ODE solvers
- Works for 1 ODE or a system of ODEs
- Great ODE solver due to its versatility, but may not integrate to the required precision (not an issue in ME 2004)
- “Family” of MATLAB ODE solvers include `ode23`, `ode15s`, etc.

# ode45

- Call structure (syntax):

`[t, y] = ode45(func, tspan, y0)`

- `func`: ODE (or system of ODEs) written as an anonymous function
- `tspan`: Interval of integration. Vector
- `y0`: Initial condition(s). Scalar or vector
  - Scalar if ODE only has 1 initial condition; vector if ODE has multiple Ics
- `t`: Time vector. Vector
- `y`: Solution vector. Vector