# Task for lecture 12

Consider the following differential equation

$$\left.\begin{array}{l} y''(x) = -\cos(y(x)) \cdot \sin(y'(x)) \quad \text{for} \quad 0 < x < 10 \\ y(0) = 0 \quad , \quad y(10) = 3 \end{array}\right\} \tag{1}$$

- Rewrite the problem as two first order equations.
- Use the shooting method (Shoot from NR) to convert the problem to an initial value problem.
- Solve the problem with a method of your choice (use a stepper method, or discretize and "simulate" by Euler or Midpoint etc.)
- If time allows, plot the found solution u(x) for $0 \leq x \leq 10$.