

---

## LAB 5

---

Solve the following two-point boundary value problems using the shooting method (with Newton iterations and RK4 for the solution of the IVP problems):

1.

$$u'' + u = f, \quad -1 < t < 1, \\ u(-1) = u(1) = 0,$$

with  $f \in C([-1, 1])$ . Check your code on at least three problems with different choices of  $f$  (for which you know how to obtain the exact solution).

✓ 2.

$$u'' + u = \frac{2(u')^2}{u}, \quad -1 < t < 1, \\ u(-1) = u(1) = (e + e^{-1})^{-1}.$$