

Section 10.1

Exercise 1. Solve the 2-point boundary problems or show that it has no solution.

1. $y'' + y = 0, \quad y(0) = 1, \quad y(L) = 0.$

2. $y'' + 4y = \sin x, \quad y'(0) = 0, \quad y(\pi) = 0.$

Exercise 2. Solve the boundary problems $y'' - ry = 0, \quad y(0) = 0, \quad y(\pi) = 0$

definition: The values of r for which the problem has non zero solutions are called eigenvalues and the non zero solutions are called eigenfunctions.

Exercise 3. Find the eigenvalues and eigenfunctions of

$$y'' + ry = 0, \quad y'(0) = 0, \quad y(L) = 0$$