Assignment 2 for ANT Lab 21/01/2020

Solve the following boundary value problem using finite difference method (fictitious point at the boundary conditions). Print nodes, value of unknowns as well as absolute error.

Problem 1:

$$u''(x) = -\pi^2 \cos(\pi x); \quad u(0) = 1,\ u'(0.5) = -\pi.$$

Take $n = 30$. (exact solution: $\cos(\pi x)$)

Problem 2:

$$u''(x) + u(x) = \sin(3x); \quad u(0) + u'(0) = -1,\ u'(\pi/2) = 1.$$

Take $n = 30$. (exact solution: $-\cos(x) + (3/8)\sin x - (1/8)\sin 3x$)