Practice 4

Topic: ***Application of the method of A.A. Andronov for a research of nonlinear ACS in the phase plane***

The phase plane method was developed by Russian scientist *A. A. Andronov (А.А. Андронов).*

This method is intended for research of linear and nonlinear ACS of the 2nd order, but it is not a restriction, because it is always possible to decrease the order of mathematical equations for system description.

Create the equations of a phase trajectory, i.e. $x_2 = f(x_1)$ for systems which are described by the following equations:

1. $T_1 \ddot{x} + T_2 \dot{x} + x = 0$
2. $T^2 \ddot{x} + \xi T \dot{x} + x = 0$
3. $T^2 \ddot{x} + x = 0$

at restrictions $T_i \le T_{i\ \text{доп.}}$ $\forall \mathrm{i} = \overline{1,\mathrm{n}}$; $0 < \xi < 1$.