

Practice 11

Topic: **Creating a mathematical model of the nonlinear ACS set by the specific scheme**

Example Obtain the mathematical model of nonlinear ACS set by the following scheme:

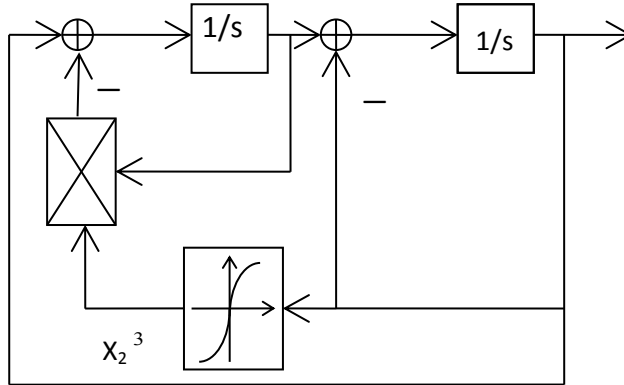


Fig. – Scheme of nonlinear ACS

Solution

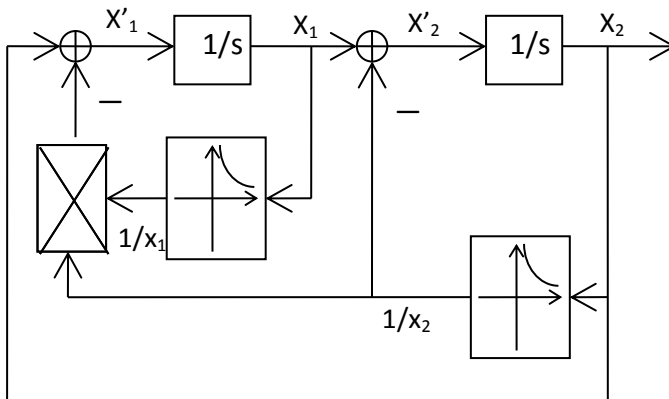
Dynamic equations (mathematical model) of nonlinear SAU in the state-space according to the set scheme register:

$$\begin{cases} \dot{x}_1 = -x_1 x_2^3 + x_2 \\ \dot{x}_2 = x_1 - x_2 \end{cases}; \quad x \in \mathbb{R}^2.$$

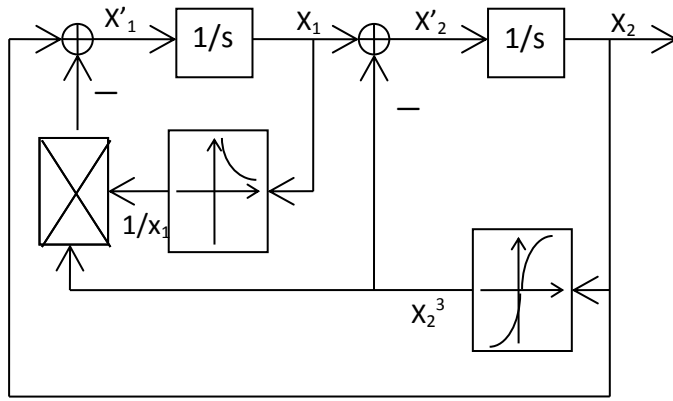
Task: Obtain the mathematical model of nonlinear ACS set by the scheme according to variant.

Variants:

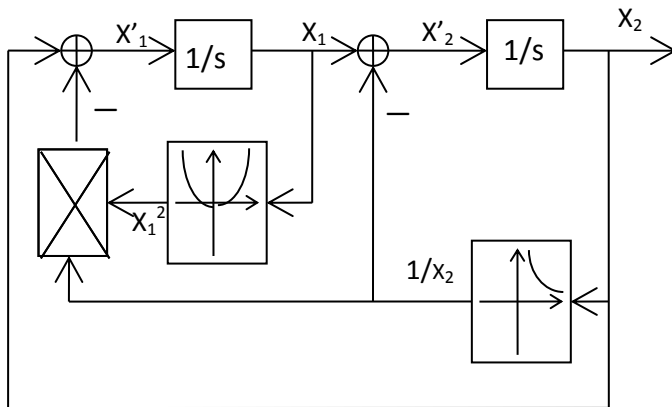
1)



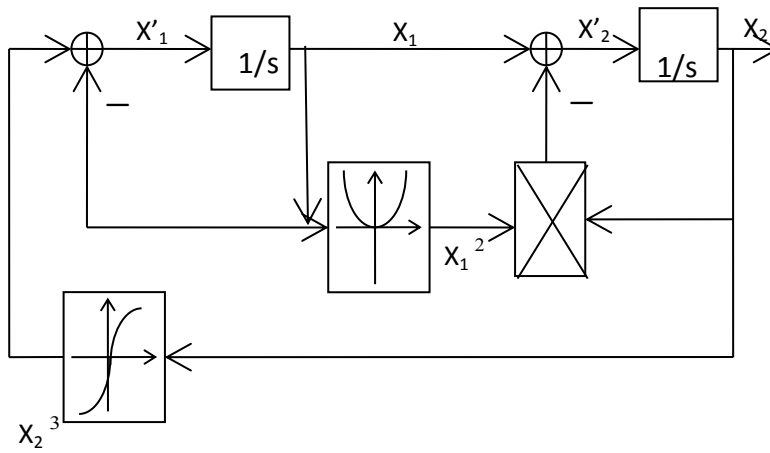
2)



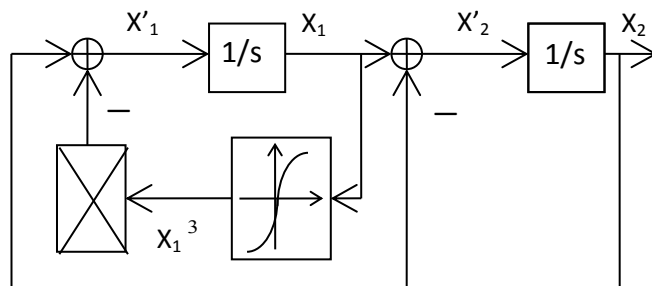
3)



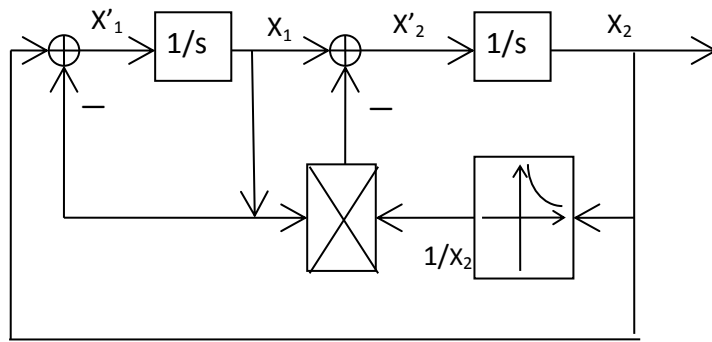
4)



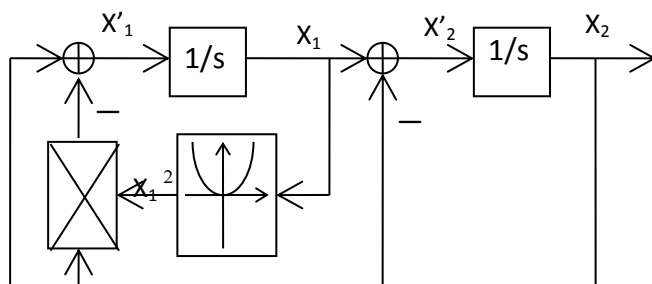
5)



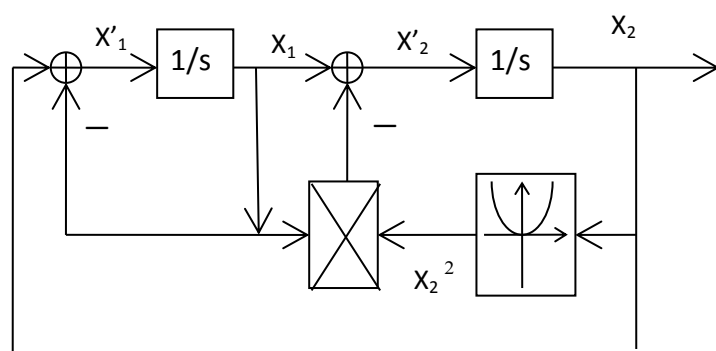
6)



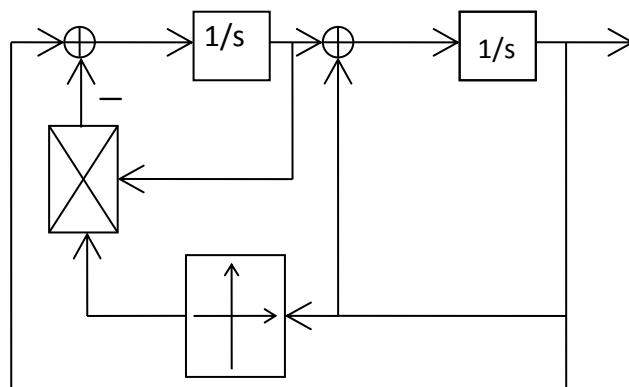
7)



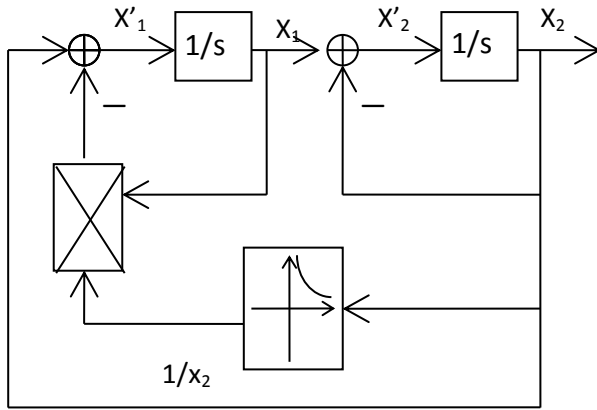
8)



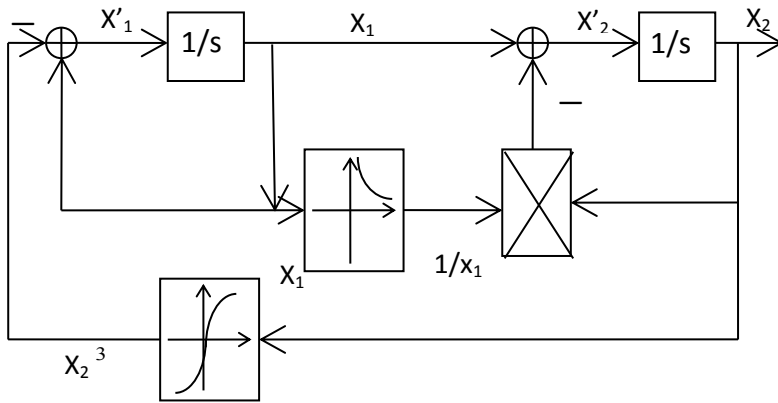
9)



10)



11)



12)

