

Exercise Sheet 5: Stability**Problem 9:**

Consider the following nonlinear system:

$$\begin{aligned}\dot{x}_1 &= x_2 \\ \dot{x}_2 &= -x_1 + x_1^3 - x_2\end{aligned}$$

- a. Determine all equilibrium points of the nonlinear system
- b. For each equilibrium point, determine the standardized version of the nonlinear system (that is, transform the system such that the equilibrium point becomes the origin)