Exercises 5. 2. 2026

The last exercise is to be handed in at the beginning of the next lecture.

1. What are the possible types of Hamiltonian systems with one degree of freedom? How do the corresponding Hamiltonian functions look like? Which of the occurring equilibria are structurally stable — and in what sense?

2. Classify all linear Hamiltonian systems in two degrees of freedom that have no multiple eigenvalues. *Hint:* if λ is an eigenvalue, then not only $\bar{\lambda}$ but also $-\lambda$ is an eigenvalue as well (as is $-\bar{\lambda}$).