

Mathematical Foundations of Neuroscience - Sample Questions - Lecture 7 - Bifurcations II

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Questions marked with * are not obligatory.

1. List all codimension 1 bifurcations in 2d
2. Formulate and prove Poincaré-Bendixon theorem
3. Give 3 examples of codimension one bifurcations in 3d that cannot occur in 2d
4. Describe how a chaotic system behaves
5. Give an example of codimension 2 bifurcation in 2d. Provide the normal form, sketch the bifurcation diagram
6. Define the quasiperiodic function. Give an example of such a function.
7. Why is the pitchfork bifurcation in 1d of an infinite codimension? (*)