

The thesis deals with periodic solutions of ordinary differential equations and examining of their stability. We are mainly limited to scalar differential equations. The first chapter is devoted to the stability of periodic solutions that is related to the Poincaré map. The aim is to decide on the asymptotic stability/instability of the fixed point of this map. To this end we need to compute derivatives of the Poincaré map of the first order or, possibly, of the higher orders. In the second chapter we introduce the concept of bifurcation and we examine the population model. In the third chapter we briefly mention the Van der Pol oscillator i.e the system of two equations. We illustrate the theory by examples.