Section 1.5 Bifurcations

Any unspecified constant in a differential equation is called a parameter. One of the techniques that is used to study differential equations is to let a parameter vary and to observe the resulting changes in the behavior of the solutions. Any large scale change is called a bifurcation and the value of the parameter for which the change occurs is called a bifurcation point.

In a bifurcation diagram, we sketch the equilibrium solutions on the λx-plane. When part of an equilibrium curve is dashed, it means the corresponding equilibrium points are unstable; and when part of an equilibrium curve is solid, it means the corresponding equilibrium points are stable.