GE 2361: *Mathematical Methods for Engineers*
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Phase portraits of linear dynamical systems

A dynamical system can be modeled as a system of coupled differential equations:

$$\mathbf{u}' = A\mathbf{u} \tag{1}$$

The solutions to any such system are described by the eigenvalues (λ) and the eigen-vectors of A. Depending on the eigenvalues (λ), the phase portrait of the system falls into one of the 10 classes below:

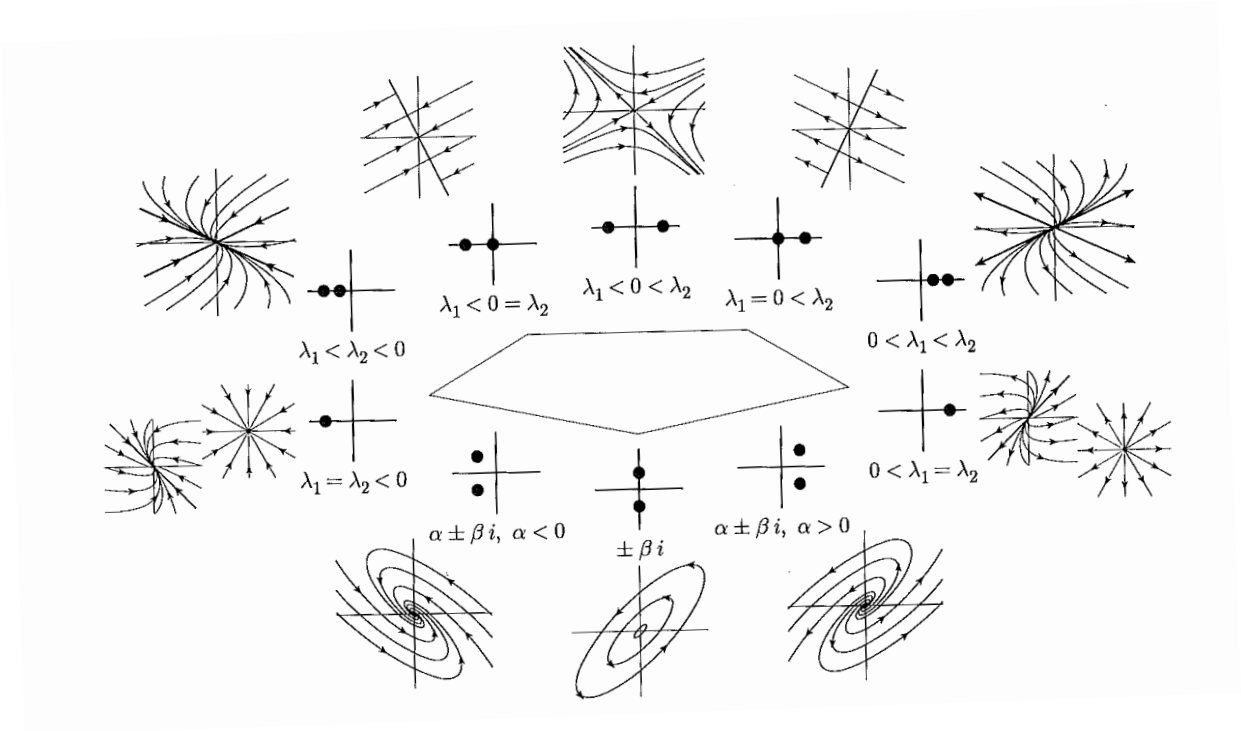

Figure 1: Phase portraits of a 2 dimensional dynamical system.