Chapter 6 Objectives

6.2 Eigenvalues and Eigenspaces
- Be able to solve equations $Ax = 0$, where $A$ is singular.
- Be able to find eigenvalues for $2 \times 2$ and $3 \times 3$ matrices.
- Be able to find eigenvectors for $2 \times 2$ matrices.

6.3 Linear Trajectories
- Be able to find linear trajectories for homogeneous linear $2 \times 2$ systems with real eigenvalues.

6.4 Homogeneous Systems with Real Eigenvalues
- Be able to find solution formulas for homogeneous linear $2 \times 2$ systems with distinct real eigenvalues.

6.5 Homogeneous Systems with Complex Eigenvalues
- Be able to classify the origin of homogeneous linear $2 \times 2$ systems.

6.7 Qualitative Behavior of Nonlinear Systems
- Be able to linearize autonomous systems.
- Be able to classify equilibrium solutions of nonlinear autonomous systems of dimension 2 or 3.