1011-34-352 **Steven Spriggs*** (`sjspriggs@yahoo.com`). *A Birfurcation in the two by two linear system.*

This paper focuses on phase portraits for two by two matrices. By solving for the eigenvalues of a two by two matrix we can generate 9 different types of graphs based on the values of the eigenvalues. In this paper, the general conditions that generate each type are given. From this, one can show where the bifrucation occurs. (This undergraduate research was carried out at Shawnee State University.) (Received August 30, 2005)