1096-39-1724 **H. Sedaghat*** (`hsedagha@vcu.edu`). *Reducibility of Planar Systems.* Preliminary report.

A significant variety of planar systems of difference equations such as

$$\begin{cases} x_{n+1} = ax_n + by_n \\ y_{n+1} = x_n^2 - ay_n \end{cases} \quad \text{or} \quad \begin{cases} x_{n+1} = x_n y_n \\ y_{n+1} = (a + bx_n)/y_n \end{cases}$$

that exhibit complex dynamics and sequences of bifurcations in open regions of the plane are reducible in the sense that their orbits within those regions may be obtained from first-order difference equations. The relationship between the solutions of the first-order surrogate and the orbits of the original system is generally complex owing to a number of possible issues, such as the non-invariance of the open region on which the first-order equation is related to the system, restrictions on domains or ranges of functions or the manner in which orbits of the system are constructed from the solutions of the first-order equation. We give a general characterization of reducible systems and discuss some of the issues pertaining to them. (Received September 16, 2013)