1046-05-155 **Victor O. Larsen*** (`vlarsen@middlebury.edu`), 3501 Middlebury College, Middlebury, VT 05753. *A Tree with Maximum Degree Three and Game Chromatic Number Four.* Preliminary report.

We examine the following coloring game played on a graph G. Given a fixed positive integer r, Alice and Bob alternately color the vertices of G with r colors. Alice makes the first move. The game ends when no more vertices can be legally colored. A color α is legal for a vertex u if no neighbors of u are colored with α. If the entire graph is eventually colored, Alice wins. If there exists any uncolored vertex with no legal color, then Bob wins. The least r such that Alice has a winning strategy is called the game chromatic number of G. This parameter has been examined in many other papers, and it has been proven that every tree has game chromatic number at most 4. We show that there exists a tree with maximum degree 3 on which Alice does not have a winning strategy using only 3 colors. This proves that there exists a tree with maximum degree 3 and game chromatic number 4. (Received August 07, 2008)