

1077-05-445

Risto Atanasov, Mark Budden, Joseph DiNatale, Lindsay Erickson, Robert Fenney, William Nathan Hack, Maxwell Hostetter* (mh1354@students.armstrong.edu), **Joshua Lambert and Warren Shreve.** *Nim on wheel graphs.* Preliminary report.

The game Nim is a two player combinatorial game in which players take stones from distinct piles. Although a complete solution has been found for Nim, the game's graph theory counterpart (appropriately dubbed Nim on graphs) still has many unresolved issues. Nim on graphs is played by moving a game piece along the edges of a graph. Each edge on the graph is assigned a positive integer weight and as the game piece moves along an edge, the player reduces the weight of the edge to a nonnegative integer. In the event that the weight of an edge becomes zero, we remove the edge from the graph. The game ends when the game piece is on a vertex with no incident edges. We expand upon previous strategies for Nim on paths and cycles to explore winning strategies for Nim on wheel graphs. (Received September 01, 2011)