Representing Numbers Using Fibonacci Variants

Steve Lucas, JMU

Abstract: Every natural number has a unique representation as a sum of Fibonacci numbers, with the constraint that no consecutive pair is chosen. We show where this representation is useful, extend it to representing arbitrary reals via a continued fraction representation, and make it more efficient using generalizations of Fibonacci numbers. Given time, we shall also see how arithmetic can also be performed on numbers in these forms in a variety of ways, one of which uses a checkerboard, and so is particularly visual.

Non-Classical Knights and Knaves

Jason Rosenhouse, JMU

Abstract: Puzzles about liars and truthtellers (knights and knaves) have a long history as tools for illuminating ideas in classical propositional logic. By “classical logic" we mean the sort of logic we simply take for granted in elementary philosophy and mathematics courses. There are, however, numerous systems of non-classical propositional logic, and it can be both fun and enlightening to consider what liar and truthteller puzzles might look like in such a context. After introducing the genre with a few classical puzzles, we shall go on to consider three-valued logic and fuzzy logic. This talk will be accessible for undergraduates.

Monday, September 9 at 3:45 pm in Roop 103, refreshments at 3:30