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Michelle L Ghrist* (michelle.ghrist@usafa.edu) and **James S Rolf**. *The Great Spline Mystery*.

Cubic splines are a commonly used way to create an interpolating function, a function which goes through a set of discrete data points; cubic splines are essentially piecewise cubic polynomials. There are several different types of commonly used cubic splines which differ only based on which choice of boundary conditions is imposed.

Over the past eight years, we have developed a Java applet which creates various approximations (including cubic splines) to a user-defined function. In addition, we created an associated writing assignment that allows students to practice good mathematical communication; we have used this assignment in various numerical analysis classes. In this talk, I discuss one particular aspect of this writing assignment: an exercise in which students are asked to logically deduce which kind of spline is being used by ApproxTool. This exercise has proved to be extremely difficult for students and stretches their understanding of the various splines as well as their problem-solving and communication skills. I examine various strategies for solving the great spline mystery and discuss the impact of this assignment on students' written communication skills.

The ApproxTool applet is available free at <http://www.jimrolf.com/java/approxTool/approxTool.html>. (Received September 25, 2012)