

1077-K5-2721 **Mairead Greene*** (mairead.greene@rockhurst.edu), 1100 Rockhurst Road, Kansas City, MO 64110, and **Paula Shorter** (paula.shorter@rockhurst.edu). *Mathematical Reasoning in Calculus: Moving Between Representations.*

One form of mathematical thinking that we engage our calculus students in from the beginning is exploring concepts in multiple different representations (graphical, narrative, symbolic, numerical) and connecting an understanding of concepts across representations. To achieve this, students are often asked to develop a concept in one representation and then in turn take the same concept and extend their understanding to a new representation. This strengthens and deepens the students' understanding of concepts and at the same time prepares them to approach problems using multiple representations throughout the course. In addition, we pose typical calculus problems, but in a variety of different representations which forces students to look beyond memorized methods and apply their understanding of the concepts instead. This improves their ability to approach more typical analytical versions of these problems as they can reach for graphical and numerical tools to help them understand the situation. This talk will illustrate situations where students are required to understand concepts in multiple representations and connect this understanding across representations. We will also discuss how we develop this ability in our precalculus and calculus courses at Rockhurst University. (Received September 22, 2011)