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Linking the understanding of derivatives of inverse functions to the teaching of inverse functions in high school mathematics for preservice secondary mathematics teachers in first-semester calculus.

Making explicit mathematical connections for preservice secondary mathematics teachers to aspects of secondary school mathematics teaching or mathematical knowledge for teaching addresses a key element of the recommendations in the Mathematical Education of Teachers II report. Understanding how to represent and manipulate functions as practical mathematical objects is an important cornerstone in mathematics, both in college and secondary school curricula. In particular, mathematics learners should be cognizant of the relationship between a function and its inverse, whether its inverse is itself a function, and the properties which tie the two together. However, it is the case in many secondary school mathematics classrooms that the inverse function is presented as the result of an algorithm for its computation. In this session, we present an annotated lesson for a Calculus 1 classroom that leverages the properties of inverse functions to arrive at meaningful calculus results such as the derivative of inverse trigonometric functions. By highlighting the connection between these properties and advanced mathematics content, we hope to influence preservice teachers to treat inverse functions as an important holistic concept when teaching in their own future classrooms. (Received September 25, 2018)