

1071-39-40

Amera H Almusharrf* (amera.almusharrf286@topper.wku.edu) and **Ferhan Atici** (ferhan.atici@topper.wku.edu). *Fractional trigonometric Functions*. Preliminary report.

This talk will be about fractional calculus and the development of fractional trigonometry based on the multi-valued fractional generalization of the exponential function, known as Mittag-Leffler function. The Mittag-Leffler function plays an important role in the solution of fractional order differential equations. These classes of functions allow the opportunity to generalize the classical trigonometric functions to .fractional. or .generalized. versions. First, I will give introduction and the history of the fractional calculus, Gamma function, definition of the fractional integral and derivative, and Laplace transform. Then the relationships between Mittag-Leffler function and the fractional trigonometric functions will be given. I will give a Laplace Transform table for these generalized functions in fractional calculus. Finally, I will present an application of fractional calculus for parameter estimations of one compartmental model of drug concentration in blood. (Received January 29, 2011)