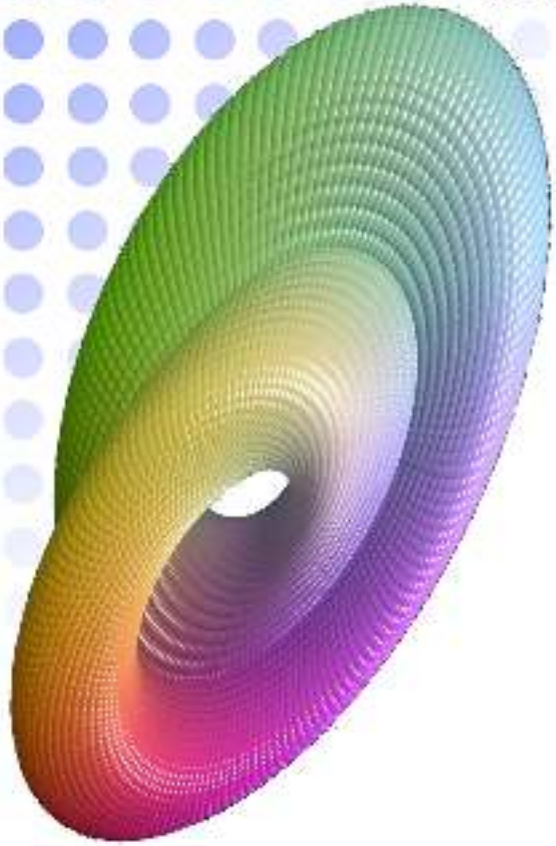
Michigan Math Club

Thursday at 4pm in the Nesbitt Room

Free Pizza and Pop



Impossibility theorems for elementary integration

Evangelos Dimou

Abstract for 19 January

The error function and logarithmic integral, defined by

$$\operatorname{erf}(x) = \int_0^x e^{-t\hat{}2}\,dt \qquad \operatorname{Li}(x) = \int_2^x \frac{1}{\ln(t)}\,dt,$$

are two very important functions within mathematics. However, they cannot be expressed in terms of elementary functions. We will provide a proof of this fact using a criterion of B. Conrad, which in turn is based on a theorem by Liouville.