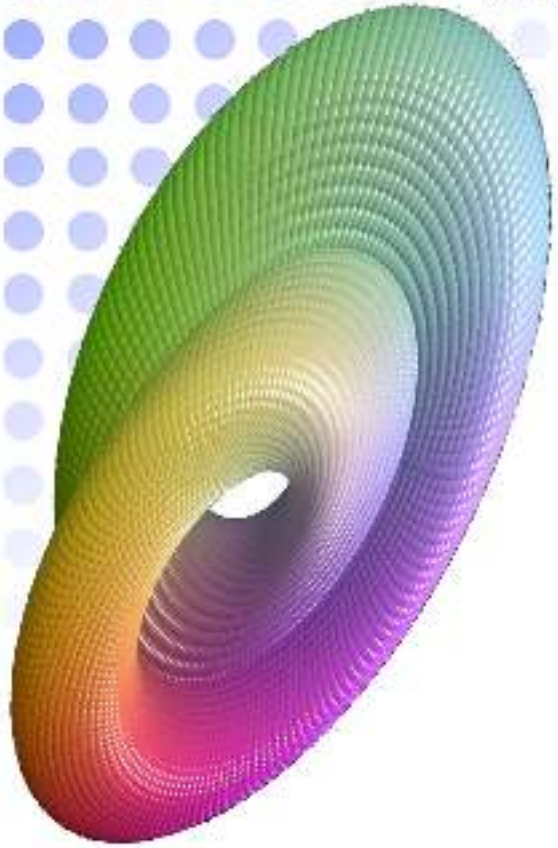
# Michigan Math Club

Thursday at 4pm in the Nesbitt Room

Free Pizza and Pop



# Precalculus Integration

Stephen DeBacker

## Abstract for 26 September

In problem 10 of his chapter on "Integration in Elementary Terms," Spivak writes: "There is another expression for $\int \sec x \, dx$, which is less cumbersome than $\log(\sec x + \tan x)$; …

$$\int \sec x \, dx = \log\left(\frac{1+\tan\frac{x}{2}}{1-\tan\frac{x}{2}}\right) = \log\left(\tan\left(\frac{x}{2}+\frac{\pi}{4}\right)\right)$$

This last expression was actually the one first discovered, and was due, not to any mathematician's cleverness, but to a curious historical accident…"

This "curious historical accident" made the evaluation of $\log(\sec x + \tan x)$ an important problem for mid-seventeenth-century mathematicians. We'll discuss questions in geography that led to the integral, the "accident," and how the integral was solved before Newton and Leibniz arrived on the scene.