

Department of Mathematics and Statistics Colloquium

*A Gambling Function with Amazing  
Derivative Properties*

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Abstract: What are the chances of achieving a goal in Vegas as a function of how much you start with? Repeatedly play a simple game with the odds against you, but bet boldly toward your goal. The probability of reaching your goal continuously increases as a function of your initial stake. Amazingly, the function never has a positive derivative, its zero almost everywhere, called singular. If you play with a friend instead of Vegas, you could make it fair by alternating the odds of house and client. Now the probability of reaching your goal is a strange new singular function. We exploit the fractal structure of the graph to characterize the derivative at each point. Such pointwise characterization has been elusive for singular functions.

**Monday, October 3 at 3:45 in Roop 103**

**refreshments at 3:30**