Fall 2014
Math 407: Upper Level Math Honors Seminar
Thursdays 11:00 - 11:50, Bouillon 103

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Office Hours: TTh 9:00 - 10:50, MW 11:00 - 11:50, and by appointment.

Course Goals: Our main goal is to show you that mathematics is living field - not every math problem has been solved, and there are **LOTS** of interesting mathematical problems that still haven't been solved. We also want you to gain some experience in:

1. Reading an article from a mathematical journal,

2. Making up your own "toy" problems to study,

3. Using Mathematica.

For Fall 2014, we will be interested in critical point theory for functions of two or more variables. As a warm up, suppose a smooth function $f : \mathbb{R} \to \mathbb{R}$ has a critical point x_1 that is a local minimum but not a global minimum. Must f have at least one other critical point x_2? Similarly, suppose a smooth function $f : \mathbb{R} \to \mathbb{R}$ has two local minima. Must f have at least one more critical point? Do these statement still hold if f is a function of two or more variables? If not, can we find a "nice" extra condition that guarantees the existence of another critical point in these circumstances?

Requirements:

1. You need to have a desire and a willingness to try new things! Math is not a spectator sport!

2. You need to print out and read "A Surface with One Local Minimum", by J. Marshall Ash and Harland Sexton, *Mathematics Magazine*, Vol. 58 (1985), No. 3, pp. 147-149.

1   Grades

Your grade will be determined by your attendance. We will have 10 days of class this quarter, and every missed day will result in a 6% deduction from your class grade.

	$87 - 89.9 : B+$	$77 - 79.9 : C+$	$67 - 69.9 : D+$	below 60 $: F$
$93 - 100 : A$	$83 - 86.9 : B$	$73 - 76.9 : C$	$63 - 66.9 : D$	
$90 - 92.9 : A-$	$80 - 82.9 : B-$	$70 - 72.9 : C-$	$60 - 62.9 : D-$	

2   Legalese/Fine Print

Students with disabilities who wish to set up academic adjustments in this class should give me a copy of their "Confirmation of Eligibility for Academic Adjustments" from the Disability Support Services Office as soon as possible so we can discuss how the approved adjustments will be implemented in this class. Students without this form should contact the Disability Support Services Office, Bouillon 140 or ds@cwu.edu or 963-1202.