Σ
The Villanova Sum Times

Villanova Math Club Update:

The Math Club officers for 2009/2010 are:

President - Maria Guida
Maria.guida@villanova.edu

Vice Presidents - Chris Dzera and Alexa Curcio
Christopher.dzera@villanova.edu
Alexa.Curcio@villanova.edu

If you would like to get involved in the Math Club, contact any of these officers. The academic advisor is Dr. Joseph Pigeon.

In This Issue:

'09 Math T-Shirts

There are still some math t-shirts left from last semester. Please stop by the Math Department (SAC 305) to purchase one for only $5.00.

Limited quantities available!

The Department of Mathematical Sciences is located in the Saint Augustine Center, Office 305.
Department Phone: 610.519.4850
Fax: 610.519.6928
Email: math@villanova.edu

Chairperson: Dr. Douglas Norton
Douglas.norton@villanova.edu

Staff: Marie O'Brien (610-519-4809)
Marie.obrien@villanova.edu

Lorraine McGraw (610-519-4850)
Lorraine.mcgraw@villanova.edu

Upcoming Fall 2009 Colloquiums:

Friday, October 30th: Dr. Jesse Frey
Friday, November 13th: Dr. David Cohoon
Tuesday, December 8th: Dr. Paul Lupinacci

All colloquiums will be held at 2:30 in Mendel 154 (except where noted).
Topics will be announced closer to the presentation dates.

NovaNetwork

Attention Students looking for a job, internship or career information-- The Alumni Association of Villanova University has a website called NovaNetwork.
>http://www.villanova.edu/advance/alumni/vuonline.htm<
Sign up to be a part of this free network for Villanovans. One important feature in NovaNetwork is the **"Career Connections"** section. This is a great resource to help alumni and students find **insight into a particular career or career-related interest through online networking with other Villanovans.**

"Sum" Games: SuDoku
(answer on last page)

| 1				8	3	2		5
8					6	1		
	9	5						
6	5				8			
3								4
			2				5	8
						4	9	
		3	8					1
2		6	5	1				3
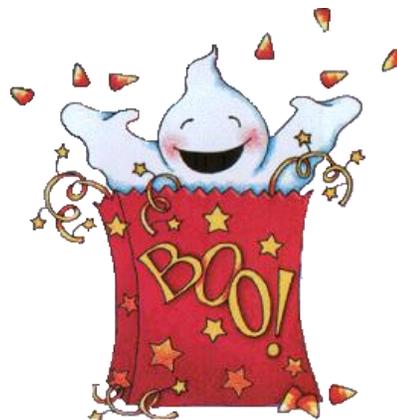
"THE ESSENCE OF MATHEMATICS IS NOT TO MAKE SIMPLE THINGS COMPLICATED, BUT TO MAKE COMPLICATED THINGS SIMPLE."

- S. Gudder

Math Courses Offered in Spring 2010:

MAT 4310 **Stat Methods** with Dr. Paul Lupinacci
Section 001; TR 1:00-2:15; CRN 34604
Section 002; TR 2:30-3:45; CRN 34605
Description: This course focuses on introductory statistical methods including data displays and summarization, probability distributions, point and interval estimation, hypothesis testing, categorical data analysis, regression and correlation.

MAT 4550 **Math of Financial Derivatives** with Dr. Klaus Volpert
Section 001; MW 3:00-4:15; CRN 34606
Description: Financial derivatives have become an indispensable part in today's economy. Examples are stock options, oil futures, currency contracts, credit derivatives and much more. They are used for compensation, speculation, yield enhancements of investments, and, most importantly, for *risk management.* Since every company is exposed to some risk, there is virtually no company that does not deal with derivatives in some way. Hedge Funds often play the counterpart to the companies by investing in these derivatives and thereby redistributing their market risks. Hedge funds have experienced explosive growth over the last two decades.
Financial derivatives are not uncontroversial. While former Federal Reserve chairman Alan Greenspan has called them *engines of the economy*, billionaire investor Warren Buffet has famously declared them *weapons of mass destruction.* Indeed, derivatives were at the heart of the near-collapse of our economy last fall.
The challenge to the mathematician is to find a *fair price* for derivative contracts. In 1973, a mathematician, Fischer Black, and an economist, Myron Scholes, developed a successful model that has become the foundation for the whole theory, which won them the Nobel prize in economics in 1997. Our goals are to understand this model, as well its extensions and refinements.

MAT 4600 **Deterministic Operations Research** with Dr. Bruce Pollack-Johnson
Section 001; TR 11:30-12:45; CRN 34607
Description: Operations Research involves different kinds of discrete and continuous optimization problems. Examples of problem categories we will study include the Traveling Salesperson Problem (finding the shortest/cheapest way to visit a bunch of cities in a loop), the Critical Path Method (finding the shortest time a project can be completed in, and which activities are critical to finishing on time), the Assignment Problem (e.g., how to assign graders to professors to maximize compatibility of background to courses), the Diet Problem (what combination of food will meet your nutritional requirements at the lowest cost), Dynamic Programming (e.g., how to allocate study hours to courses for Finals to maximize average increase in GPA), the Shortest Path Problem (what's the shortest way to get from one point to another, like Google Maps does for you), and the Production Problem (e.g., how many of different types of candles to produce for a fundraiser to maximize total profit). Categories of problems not mentioned above that we will study include Linear Programming, Integer Programming, Network Problems, Nonlinear Programming, Inventory Theory, and Game Theory. Students will do a project from their own lives that uses one of the techniques we will study in the course.

MAT 5900 **Seminar: Unsolved Problems in Number Theory** with Dr. Robert Styer
Section 001; MWF 11:30-12:20; CRN 34608
Section 002; MWF 12:30-1:20; CRN 34609
Description: This course introduces you to the thrill of (semi-) independent research. Participants work on problems about happy numbers, lucky numbers, perfect numbers, the 3x+1 problem, the 196 algorithm, stepping to infinity on Gaussian primes, the Riemann Hypothesis, representing numbers by ones, Beal's conjecture (by a rich Texan who is giving a lot of money if you solve it!)

MAT 5920 **Mathematics of Medical Imaging** with Dr. Timothy Feeman
Section 001; MWF 10:30-11:20; CRN 34610
Description: This course focuses on the mathematics involved in computerized tomography -- the creation and analysis of CAT scans. Topics include the Radon and Fourier transforms (both continuous and discrete), convolution, sampling, filters, and approximate solutions to systems of linear equations. All topics are presented and discussed in context. Possible additional topics include other scanning modalities, such as PET and SPECT, and magnetic resonance imaging (MRI). We will use computer algebra systems (Maple and/or Matlab) throughout. *No prior experience with Maple or Matlab will be assumed.* **Prerequisites:** MAT 2500 and MAT 2705. **This course satisfies the**
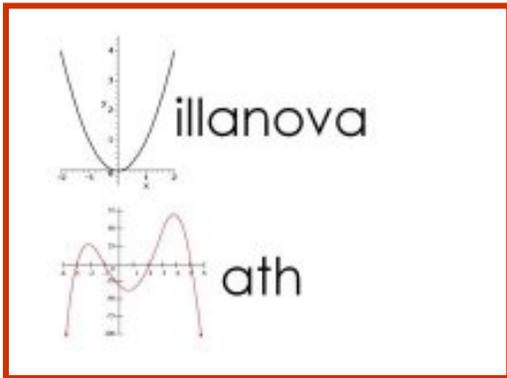
Villanova Math

We're now on Facebook! Join the Villanova Math group to get in touch with current math majors and alumni!

Undergraduate Opportunities ~The Math Office keeps a binder of information received by them related to student internships, summer opportunites, REUs, and undergraduate conferences. Feel free to stop by any time to check it out.

"Sum" Games: SuDoku

(answer)

1	6	7	9	8	3	2	4	5
8	3	2	4	5	6	1	7	9
4	9	5	7	2	1	8	3	6
6	5	4	1	9	8	3	2	7
3	2	8	6	7	5	9	1	4
7	1	9	2	3	4	6	5	8
5	8	1	3	6	7	4	9	2
9	7	3	8	4	2	5	6	1
2	4	6	5	1	9	7	8	3

off the mark.com   by Mark Parisi

I FIND I PREFER RELAXED FIT...

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Happy Halloween

TRICK or TREAT