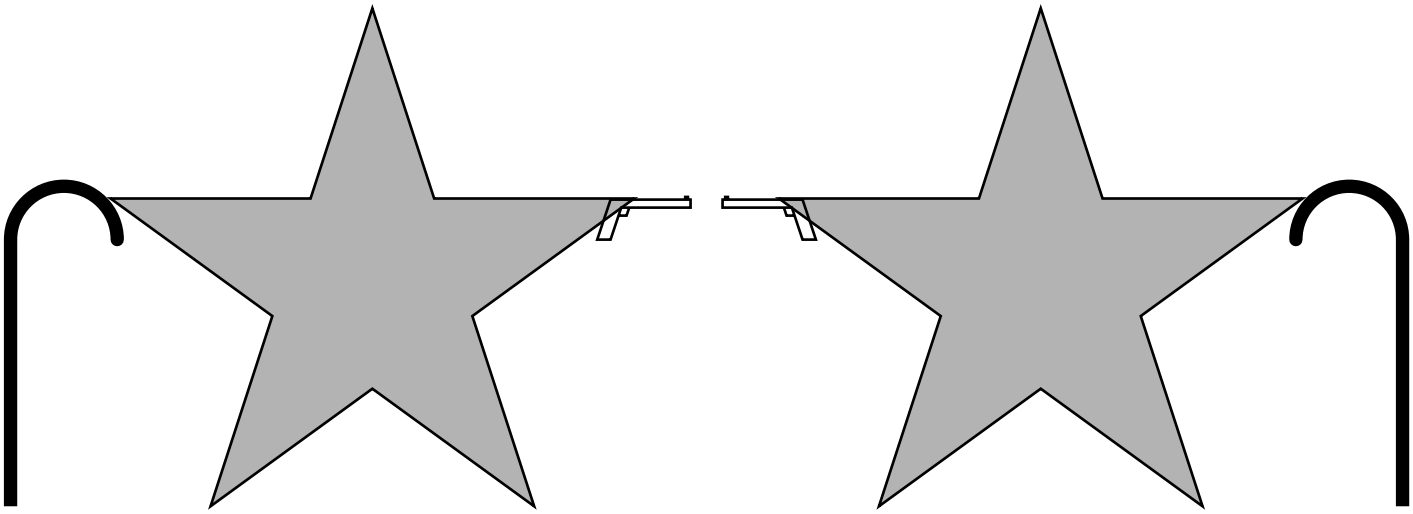
A Course for Fall 2005

MAA 6416-01 Functional Analysis

Instructor: Steve Bellenot bellenot@math.fsu.edu
http://www.math.fsu.edu/~bellenot/class/f05/fun/
MWF 10:10-11:00 (MW in 107 LOV, F in 112 MCH)



Pictured: *Weak Star Dual* , adapted from E. Rumsey's *A Liberal Arts View of Math*

Duality is one of the themes of Functional Analysis, X^*, the dual space of X, is the vector space of all (continuous) linear functionals from X to the scaler field ($\mathbb{R}$ or $\mathbb{C}$). There is a topology one can put on X^* called the weak-star topology, which has the advantage of having large compact sets.

- This is an introductory analysis class for both pure and applied math students and has only an Advanced Calculus prerequisite (or permission of the instructor).
- Functional Analysis takes its name because it studies (∞-dimensional) spaces of functions and the linear operators between them.
- For textbooks see the web page above (no other class has two textbooks with a total under $30)
- Topics:
  - applications to differential equations
  - duality of norm spaces and operators, in particular Hahn-Banach, Open mapping and the principle of uniform boundedness.
  - basic introduction to generalized functions (distributions)
  - spectral theory for compact operators on a Banach space