1144-26-200 **Fred Halpern*** (fredhalp@gmail.com), 10845 N. Central Expwy #1141, Dallas, TX 75231.
From Discrete to Analytic Inequality.

Mathematical folklore suggests that many discrete inequalities have analytic analogs. We formalize this intuition with a methodology that systematically provides discrete inequalities with valid analytic analogs.

A key insight is we must start with a very general inequality valid for all n and all collections of n-sequences whose (surprisingly) manipulation of sequence terms are homogeneous. The generality yields inequalities that are manipulated to provide a uniform system of inequalities between Riemann sums.

We state a general master theorem. The Holder (Cauchy–Schwarz) and Minkowski inequalities are easy corollaries. It also yields an Analytic analogue to the Arithmetic-Geometric Mean inequality (interesting special cases provided).

The collections of n-sequences can be restricted by conditions on the sequences (positive, monotone, convex) if the corresponding condition on functions yield Riemann sums whose terms satisfy the conditions. Jensen's and Chebyshev's sum inequalities are corollaries. .

The method also yields double integral inequalities corresponding to double sums of doubly indexed sequences inequalities (e.g., Minkowski's double sum inequality) and convolution inequalities (e.g., Young's inequality). (Received August 24, 2018)