

1125-VC-3009 **Rommel G Regis*** (rregis@sju.edu), Saint Joseph's University, Department of Mathematics,
5600 City Avenue, Philadelphia, PA 19131. *Simplex Gradients and Generalized Simplex
Derivatives*. Preliminary report.

Given a function f defined on the Euclidean space R^n and a set X of vertices of a simplex in R^n (i.e., X is a set of $n + 1$ affinely independent points), the simplex gradient of f with respect to X is the gradient of a linear model that interpolates the data points on the surface of f that correspond to X . The simplex gradient is important in the area of derivative-free optimization and it is used in the design of practical optimization algorithms. This talk will present the basic mathematical properties of simplex gradients and more general simplex derivatives. (Received September 20, 2016)