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Derivation and Analysis of Green Coordinates

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Abstract. Green coordinates define a special representation of a point inside a closed polygon in terms of its vertices and the normals to its edges (faces). This representation has been found to be very useful for object manipulation in computer graphics. The mapping defined by Green coordinates is shown to be analytic. It has a closed form formula in 2D and 3D, and it can be extended analytically through a face of the polygon. In 2D the mapping is proved to be conformal.

Keywords. Conformal mapping, Green identities, barycentric coordinates, analytic continuation, quasiconformal mapping.

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