

Vector Calculus Theorems

Mathematics

Green, Stokes and the divergence theorem, and what each one relates.

Each turns an integral over a region into one over its boundary.

Theorem	Relates	Requires
Gradient theorem	Line integral to endpoints	$F = \int f$ along the path
Green	Line integral to a double	Simple closed curve, a plane
Stokes	Line integral to a surface	Oriented surface with boundary
Divergence	Surface integral to a volume	Closed surface, a solid inside

One idea in four costumes: the integral of a derivative over a region equals the function itself over the boundary.