

$$\int_a^b \vec{\nabla} T \cdot d\vec{\ell} = T(b) - T(a)$$

$$\int_V (\vec{\nabla} \cdot \vec{v}) d\tau = \oint_S \vec{v} \cdot d\vec{a}$$

$$\int_S (\vec{\nabla} \times \vec{v}) \cdot d\vec{a} = \oint_C \vec{v} \cdot d\vec{\ell}$$

the integral of a derivative  
( of field )  
over a region  
( scalar  
or  
vector )

is given by

the value of the function  
( vector  
or  
scalar )  
at the boundaries  
( vector or scalar  
field )