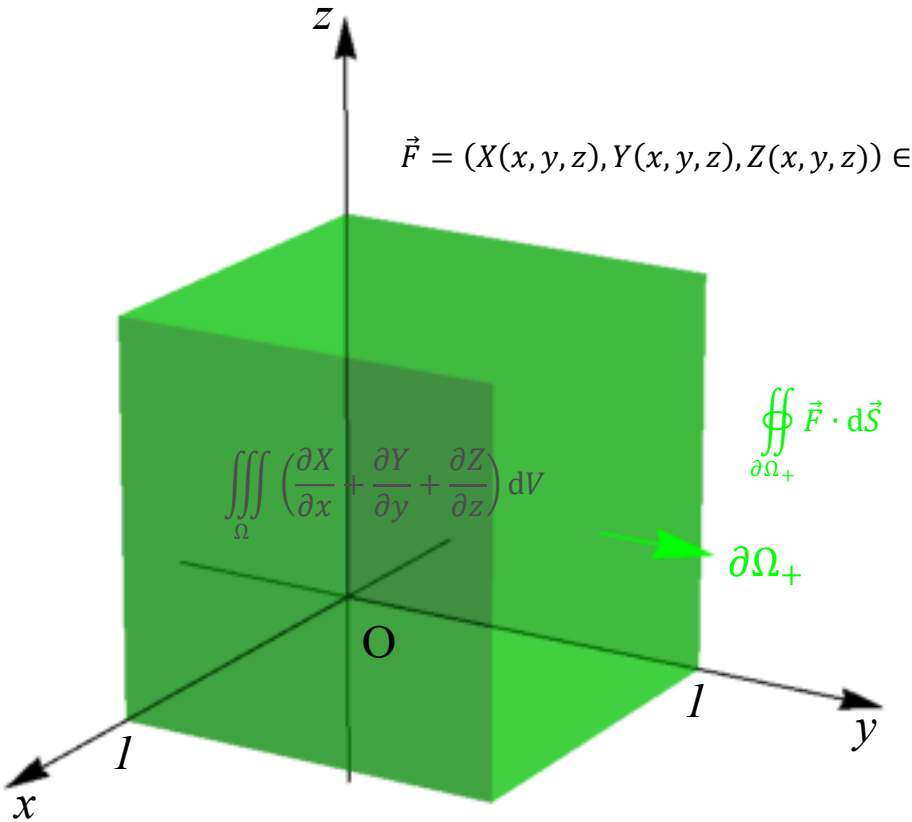

$$\oiint_{\partial\Omega_+} \vec{F} \cdot \mathrm{d}\vec{S} = \oiint_{\partial\Omega_+} (X, Y, Z) \cdot (\mathrm{d}y \wedge \mathrm{d}z, \mathrm{d}z \wedge \mathrm{d}x, \mathrm{d}x \wedge \mathrm{d}y)$$

$$= \oiint_{\partial\Omega_+} X\mathrm{d}y \wedge \mathrm{d}z + Y\mathrm{d}z \wedge \mathrm{d}x + Z\mathrm{d}x \wedge \mathrm{d}y$$

$$= \iiint_{\Omega} \left(\frac{\partial X}{\partial x} + \frac{\partial Y}{\partial y} + \frac{\partial Z}{\partial z}\right) \mathrm{d}V = \iiint_{\Omega} \vec{\nabla} \cdot \vec{F}\, \mathrm{d}V$$