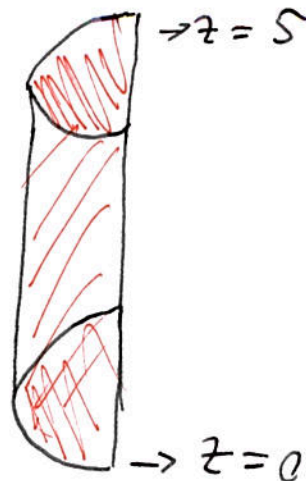
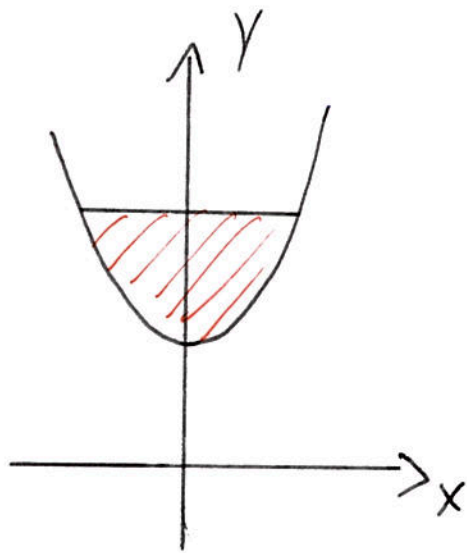


Z15



$$I = \int_{\mathbb{F}} \vec{u} \cdot \vec{n} \, dV$$

$$\left( = \int_{\mathbb{F}} \vec{u} \cdot d\vec{A} \right)$$

Oberflächenintegral!

Satz von Gauß ist anwendbar und bringt dies auf ein  
Volumenintegral:

$$I = \int_V \operatorname{div}(\vec{u}) \, d^3V$$

$$\text{mit } \operatorname{div} \vec{u} = 8x - \frac{2}{\cos^2 z} + \frac{2}{\cos^2 z} - 3x$$

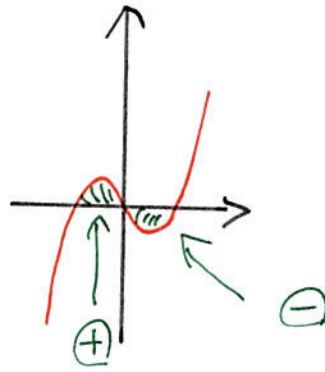
$$= \int_{-1}^1 \left( \int_1^5 \left( \int_{1+x^2}^2 5x \, dy \right) dz \right) dx$$

$$= \underline{5x}$$

$$= \int_{-1}^1 \left( \int_1^5 \left( (2 - (1+x^2)) \cdot 5x \right) dz \right) dx$$

$$= \int_{-1}^1 4 \cdot (10x - 5x + 5x^3) dx$$

ungerade Funktion



$$= \underline{0}$$