Integrale skalarer Funktionen bis 3D

	1D	2D	3D
Lininenintegral	$\int\limits_a^b f(x)dx$ **VT:** $x \mapsto \xi$ $dx = J\,d\xi,\ J = d_\xi x$	$\int\limits_C f(x,y)ds$ $C:\ \underline{r}(t) = \big(x(t), y(t)\big)$ $ds = \lvert\dot{\underline{r}}\rvert dt = \sqrt{\dot{x}^2 + \dot{y}^2}dt$	$\int\limits_C f(x,y,z)ds$ $C:\ \underline{r}(t) = \big(x(t), y(t), z(t)\big)$ $ds = \lvert\dot{\underline{r}}\rvert dt = \sqrt{\dot{x}^2 + \dot{y}^2 + \dot{z}^2}dt$
Flächen-/Oberflächenintegral	—	$\int\limits_F f(x,y)dF$ $dF = dxdy$ **VT:** $x, y \mapsto \xi, \eta$ $dxdy = J\,d\xi d\eta,\ J = \dfrac{\partial(x,y)}{\partial(\xi,\eta)}$	$\int\limits_O f(x,y,z)dO$ $O:\ \underline{r}(u,v) = \big(x(u,v), y(u,v), z(u,v)\big)$ $dO = \lvert\partial_u\underline{r} \times \partial_v\underline{r}\rvert dudv$
Volumenintegral	—	—	$\int\limits_V f(x,y,z)dV$ $dV = dxdydz$ **VT:** $x, y, z \mapsto \xi, \eta, \zeta$ $dxdydz = Jd\xi d\eta d\zeta,\ J = \dfrac{\partial(x,y,z)}{\partial(\xi,\eta,\zeta)}$