1 Operator and range syntax

bare symbol $\int$
 indefinite integral $\int x\,dx$
 definite integral $\int_a^b x\,dx$
 contour integral, basic notation $\int_C x\,dx$
 n-dimensional domain over reals $\int_{\mathbb{R}^n} x\,dx$
 n-dimensional domain over range $\int_{[-\pi,\pi]^n} x\,dx$
 closed contour integral, dedicated symbol $\oint_C \frac{1}{z}\,dz$.
 loop integral $\int_{-\infty}^{(0+)} x\,dx$

2 Differential localization

elipses in differential $\int_{\mathbb{R}^n} x\,d\Theta_1 \cdots d\Theta_n$
 differential in fraction $\oint_C \frac{dz}{z}$.

3 Expressions

contour-split of C: $\int_{\text{straight}} + \int_{\text{arc}} = \pi e^{-t}$