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Dual differential forms of smooth singular chains

From *integration*

$$\int : \operatorname{sing}_k^\infty(M, \mathbb{R}) \rightarrow H^k \operatorname{Forms}(M)^* \\ c \mapsto \int_c (-)$$

and *Poincare duality*

$$\operatorname{PD}^{-1} : H^k \operatorname{Forms}(M)^* \cong H^{n-k} \operatorname{Forms}(M) \\ \int_M \omega \wedge (-) \mapsto [\omega]$$

which gives us

$$\operatorname{PD}^{-1} \circ \int : \operatorname{sing}_k^\infty(M, \mathbb{R}) \rightarrow H^{n-k} \operatorname{Forms}(M) \\ c \mapsto \theta_c \\ \int_M \omega \wedge \theta_c = \int_c \omega$$

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