

Gradient

Have: $\wedge : \wedge^p \times \wedge^q \rightarrow \wedge^{p+q}$

$$*: \wedge^p \rightarrow \wedge^{n-p}$$

Want: $d : \wedge^p \rightarrow \wedge^{p+1}$

Idea: $d : \wedge^0 \rightarrow \wedge^1$
 $f \mapsto df$

$$\therefore \alpha \in \wedge^1$$

What is $d\alpha$?

Suppose: $\alpha = f dx$

try: $d\alpha = df \wedge dx$

"exterior derivative"