Math Methods (PHYS 320): 20

Spring 2019

Reading: Boas: We will be reading Chapter 10 on tensors but for now the better thing would be to flip through this to see how the chapter is organzied.

(1) Index work:
   (a) With vector
   $$v^i \underset{\mathcal{O}}{\longrightarrow} (1,-1), \text{ and one form } \omega_j \underset{\mathcal{O}}{\longrightarrow} (a,b)$$
   where a and b are constants. Find the scalar $v^i\omega_i$.
   (b) With metric
   $$g_{ij} \underset{\mathcal{O}}{\longrightarrow} \begin{pmatrix} F & 1 \\ 1 & 0 \end{pmatrix}$$
   find the dual vector $v_j = v^i g_{ij}$
   (c) Find the tensor $v^i\omega^j$.