Homework #5

Problem 6 - 4.2.1:

If

$$C_i = \frac{1}{2!}\epsilon_{ijk}C^{jk} \tag{1}$$

holds in all coordinate systems, and C_i is a pseudovector (tensor of rank 1) since we know that ϵ_{ijk} is a pseudotensor of rank 3, C^{jk} must be a tensor of rank 2 (the rank of the direct product becomes 5 and it is lowered by two under each contaction; since we are contracting over two indices the rank gets lowered by 4 from 5 to 1).