[12.7] If ** is antisymmetric in (*r*, *s*, … , *u*), show that  where there are *p* indices *r*, *s*, … , *u*.

Proof: There are *p*! permutations of *r*, *s*, … , *u*, half of them even and half odd.

Let **P** + be the set of even permutations, **P** − the set of odd permutations, and **P** the set of all permutations. Since ** is antisymmetric in (*r*, *s*, …, *u*)*,*



So,



Alternatively, we could solve this as



(a) *sign* (**) = 1 for ** ∈ **P** + and *sign* (**) = -1 for ** ∈ **P** -