

Exercises

E11.3 [107] Prerequisites: [OPS]. Let X be a vector space, let ϕ, ψ be two norms on it. Show that the topologies generated by ϕ and ψ coincide, if and only if there exist $0 < a < b$ such that

$$\forall x, \quad a\psi(x) \leq \phi(x) \leq b\psi(x) . \quad (11.3)$$

(When the relation (11.3) holds, we will say that the norms are "equivalent").

Solution 1. [108]