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Sommersemester 2015/16

Analysis on complex manifolds
Problem set 3

for 27.4.2016

Exercise 1: Show that a complex structure J on a real vector space V endows V with the structure of a complex vector space.

Exercise 2: Show that a complex manifold X induces a canonical almost complex structure J on the underlying real manifold M.

Exercise 3: Under the assumptions above, show that $T_{X,x} = T^{1,0}_{M,x}$ for every $x \in X$, where T_M is the tangent bundle of M and T_X is the holomorphic tangent bundle of X.

Exercise 4: Let ω be a smooth differential form on the complex manifold X. Show that $\bar{\partial}(\overline{\omega}) = \overline{\partial(\omega)}$.