MATH 7721, SPRING 2018

Homework #23,   March 2

PROBLEMS

1. Show that $\delta(J\nabla f) = 0$ for any smooth function f on a Kähler manifold.

2. As a (very narrow) special case of the Hodge decomposition theorem, every smooth differential 1-form has an exact-coclosed decomposition, in the sense of being the sum of an exact 1-form and one with zero divergence. Assuming compactness of M in addition to the other hypotheses required for equality (23.7) in the day-by-day list of topics, interpret (23.7), with any $v \in \mathfrak{h}(M)$, as an exact-coclosed decomposition of the 1-form $-2\lambda g(v, \cdot)$.

3. Verify the second parts of formulae (23.2) and (23.8) in the day-by-day list of topics.