

Math 8061 Homework 7

Due Tuesday, 11/23/10

1. Do problem 6–4 of Lee.

2. Do problem 12–3 of Lee.

3. A k -form η on a vector space V is called *decomposable* if it can be expressed as

$$\eta = \omega^1 \wedge \cdots \wedge \omega^k,$$

for 1-forms $\omega^1, \dots, \omega^k$.

a) Prove that every 2-form on \mathbb{R}^2 and every 2-form on \mathbb{R}^3 is decomposable.

b) Prove that on $V = \mathbb{R}^4$, the 2-form $\eta = dx \wedge dy + dz \wedge dw$ is not decomposable.

4. Do problem 12–6 of Lee.