

Quiz - II

November 9, 2012

Answer all questions. Maximum score is 5. Time limit: 15 minutes.

Exercise 1. Let $M = \mathbb{R}^2$ and let x and y be the (standard) coordinates. Compute $((dx + dy) \wedge (dx + 2dy))(\frac{\partial}{\partial x}, \frac{\partial}{\partial y})$. (2 points.)

Exercise 2. $M = \mathbb{R}^2$ as before. Suppose ω be a 1-form such that $\omega(\frac{\partial}{\partial x}) = 2$ and $\omega(\frac{\partial}{\partial y}) = 1$. Write ω as a linear combination of dx and dy . (1 point.)

Exercise 3. Is S^2 orientable? Can you write a non-vanishing 2-form on it? (2 points.)