

Deadline: December 1st

Let ω_1 and ω_2 be linearly independent (at each point) 1-forms on a manifold of dimension 2. Let A_1 and A_2 be functions such that $d\omega_1 = A_1 \omega_1 \wedge \omega_2$ and $d\omega_2 = A_2 \omega_1 \wedge \omega_2$, and define the 1-form $\theta = -A_1\omega_1 - A_2\omega_2$. Given a function f , consider now the same construction starting with $\tilde{\omega}_1 = \cos f \omega_1 - \sin f \omega_2$ and $\tilde{\omega}_2 = \sin f \omega_1 + \cos f \omega_2$ to get $\tilde{\theta}$. Prove that $\tilde{\theta} = \theta + df$.
