

Answer Key 13

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December 25, 2019

P148

10 Let $\eta = \sum_{i=1}^n \frac{(-1)^{i-1}}{n} x_i dx_1 \wedge \cdots \wedge d\hat{x}_i \wedge \cdots \wedge dx_n$ and verify that $d\eta = \omega$ □

11 Let ω be k -form

$$\therefore d(\omega \wedge \eta) = d\omega \wedge \eta + (-1)^k \omega \wedge d\eta = 0 \quad \square$$

12 Let ω be k -form and $\eta = d\varphi$

$$d[(-1)^k \omega \wedge \varphi] = (-1)^k d\omega \wedge \varphi + \omega \wedge d\varphi = \omega \wedge \eta \quad \square$$