

Two students ask me a question about the last part of the question 4B) in the course-work:

b)

.....

Calculate the value of the 1-form $\omega = (x^2 + y^2)de^{-x^2-y^2}$ on the vector fields **A**, **B**.

I would like to clarify that

The 1-form $\omega = (x^2 + y^2)de^{-x^2-y^2}$ equals to the product of the function $(x^2 + y^2)$ on the differential dg of the function $g = e^{-x^2-y^2}$.

$de^{-x^2-y^2} = d(e^{-x^2-y^2})$ means the differential of the function $e^{-x^2-y^2}$.

If g is a function (0-form) then its differential dg is 1-form

$$dg = \frac{\partial g}{\partial x}dx + \frac{\partial g}{\partial y}dy.$$

You have to calculate the 1-form ω on the vector field **A** then you have to calculate the 1-form ω on the vector field **B**.