

Homework 7

Due November 11th on paper at the beginning of class. Please let me know if you have a question or find a mistake.

1. Exercises 4 and 7 from Chapter 1 of do Carmo's book <https://link-springer-com.ezproxy.lib.purdue.edu/book/10.1007/978-3-642-57951-6>.
2. Exercise 1 from Chapter 4 of do Carmo's book <https://link-springer-com.ezproxy.lib.purdue.edu/book/10.1007/978-3-642-57951-6>. Note that, in the hint, the first displayed equation on page 70 means

$$g^*(dy \wedge dz + dz \wedge dx + dx \wedge dy) = \left(\sum_{i=1}^3 (g_u \wedge g_v)_i \right) du \wedge dv,$$

and the vector product $g_u \wedge g_v$ is the same thing as the cross product $g_u \times g_v$. Similarly, in the second displayed equation, we can replace ω by $g^*\omega$.