

5. (10 Puntos) Sean $f: \mathbb{R}^3 \rightarrow \mathbb{R}^2$ y $g: \mathbb{R}^2 \rightarrow \mathbb{R}^3$ dos funciones tales que:

$$f(u, v, w) = (e^{u-w}, \cos(v+u) + \sin(u+v+w)),$$

$$g(x, y) = (e^x, \cos(y-x), e^{-y}).$$

Determine $D(f \circ g)(0, 0)$.