Suppose $z = xy$, where $x = u \cos v$ and $y = uv$.

(1) Calculate $\partial z/\partial v$ by first eliminating the intermediate variables, and then calculating partial derivatives in the usual way.

$$z = (u \cos v)(uv) = u^2 v \cos(uv), \text{ so } \frac{\partial z}{\partial u} = u^2 (\cos v - v \sin v) = u^2 \cos v - u^2 v \sin v = u^2 (\cos v - v \sin v).$$

(2) Calculate $\partial z/\partial v$ by first calculating partial derivatives using the chain rule, and then eliminating the intermediate variables.

$$\frac{\partial z}{\partial v} = \frac{\partial z}{\partial x} \frac{\partial x}{\partial v} + \frac{\partial z}{\partial y} \frac{\partial y}{\partial v} = y \frac{\partial x}{\partial v} + x \frac{\partial y}{\partial v} = y(-u \sin v) + xu = -u^2 v \sin v + u^2 \cos v = u^2 (\cos v - v \sin v).$$