Note on answers for Examination 1

For problem 4, one can find the inverse map explicitly. Specifically, if

$$(u, v, w) \quad = \quad \big(x + g(y, z), y + h(z), w\big)$$

then the inverse map is given by

$$(x, y, z) \quad = \quad \big(u - g(v - h(w)),\ v - h(w),\ w\big)$$

and the latter is smooth because g and h are smooth.