

### Note on answers for Examination 1

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

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

then the inverse map is given by

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

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