

Alternative solution for Item 4

We know that f and g^{-1} are 1-1 onto functions by an argument in the notes for the lectures. To find the inverse, we can use the formula $(h \circ k)^{-1} = k^{-1} \circ h^{-1}$ and take h and k to be g^{-1} and f respectively. This yields the identity

$$(g^{-1} \circ f)^{-1} = f^{-1} \circ (g^{-1})^{-1}$$

and we now use the identity $(g^{-1})^{-1} = g$ to show that the left hand side is equal to $f^{-1} \circ g$. ■