

Answer on Question#38064 – Math - Abstract Algebra:

Let $V = \{1,2,3,4\}$ and let $f = \{(1,3), (2,1), (3,4), (4,3)\}$ and $g = \{(1,2), (2,3), (3,1), (4,1)\}$.
Find $f \circ g$.

Solution.

$$(f \circ g)(1) = f(g(1)) = f(2) = 1;$$

$$(f \circ g)(2) = f(g(2)) = f(3) = 4;$$

$$(f \circ g)(3) = f(g(3)) = f(1) = 3;$$

$$(f \circ g)(4) = f(g(4)) = f(1) = 3;$$

Hence:

$$f \circ g = \{(1,1), (2,4), (3,3), (4,3)\}.$$