430 From the axioms of simple program stack theory (Subsection 7.1.0), prove

$$top'=3 \Leftarrow push\ 3.\ push\ 4.\ push\ 5.\ pop.\ pop$$

which says that when we push something onto the stack, we find it there later at the appropriate time.

After trying the question, scroll down to the solution.

§ Here are the axioms of simple program stack theory.

(0) $top'=x \Leftarrow push\ x$

(1) $ok \Leftarrow push\ x.\ pop$

	$push\ 3.\ push\ 4.\ \underline{push\ 5.\ pop}.\ pop$	use axiom (1) and monotonicity of $.$
$\Longrightarrow$	$push\ 3.\ push\ 4.\ ok.\ pop$	ok is identity for $.$
$=$	$push\ 3.\ \underline{push\ 4.\ pop}$	use axiom (1) and monotonicity of $.$
$\Longrightarrow$	$push\ 3.\ ok$	ok is identity for $.$
$=$	$push\ 3$	use axiom (0)
$\Longrightarrow$	$top'=3$	