A SIMPLE INDUCTION PROOF

Do Exercise 4.1.19 from the notes on logic.

Please make a good job both in answering the question, and uploading :)

This is not for credit either. Just practice!

Answer. To prove that $A \equiv B \vdash (\forall x)A \equiv (\forall x)B$ without using the equivalence theorem.

1)	$A \equiv B$	$\langle$hyp$\rangle$
2)	$A \to B$	$\langle 1 + \models_{taut} \rangle$
3)	$B \to A$	$\langle 1 + \models_{taut} \rangle$
4)	$(\forall x)A \to (\forall x)B$	$\langle$2 + Ex. 4.1.16$\rangle$
5)	$(\forall x)B \to (\forall x)A$	$\langle$3 + Ex. 4.1.16$\rangle$
6)	$(\forall x)A \equiv (\forall x)B$	$\langle 4 + 5 + \models_{taut} \rangle$

Instead of "$\models_{taut}$" in the three cases above I could have said "ping-pong". □

BTW, I saw no submissions!