

Foundations of Mathematics

Quiz 2

Name: _____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete, legible** and **correct**. When appropriate, show your work and give adequate explanations.

1. Show that $\Gamma \vdash \alpha$, where $\Gamma = \{(p \rightarrow q), (q \rightarrow r)\}$ and $\alpha = (p \rightarrow r)$.

Proof:

(1)	$(p \rightarrow q)$	(Element of Γ)
(2)	$(q \rightarrow r)$	(Element of Γ)
(3)	$((p \rightarrow q) \rightarrow ((q \rightarrow r) \rightarrow (p \rightarrow r)))$	(Axiom)
(4)	$((q \rightarrow r) \rightarrow (p \rightarrow r))$	(MP applied to (1) and (3))
(5)	$(p \rightarrow r)$	(MP applied to (2) and (4)) □