

Math 2283 - Introduction to Logic

Quiz #15 - 2006.12.01

Solutions

Prove or disprove the justification for each step in the following proofs.

1. $\exists x(Px \Rightarrow Fx) \quad \therefore \exists xPx \Rightarrow \exists xFx$

1. $\exists x(Px \Rightarrow Fx)$ premise
2. $Pd^* \Rightarrow Fd^*$ $\exists E, 1$
3. Pd^* assumption
4. Fd^* $\Rightarrow E, 2, 3$
5. $\exists xFx$ $\exists I, 4$
6. $Pd^* \Rightarrow \exists xFx$ $\Rightarrow I, 3-5$
7. $\exists xPx \Rightarrow \exists xFx$ $\exists I, 6$

2. $\exists x(Px \Rightarrow Fx) \quad \therefore \exists xPx \Rightarrow \exists xFx$

1. $\exists x(Px \Rightarrow Fx)$ premise
2. $Pd^* \Rightarrow Fd^*$ $\exists E, 1$
3. $\exists xPx$ assumption
4. Pd^* ILLEGAL STEP
5. Fd^*
6. $\exists xFx$
7. $\exists xPx \Rightarrow \exists xFx$