CSE 311: Foundations of Computing I

Inference Rules

Modus Ponens	$\dfrac{p,\ p \to q}{\therefore q}$
Direct Proof	$\dfrac{p \Rightarrow q}{\therefore p \to q}$
Elim $\wedge$	$\dfrac{p \wedge q}{\therefore p,\ q}$
Intro $\wedge$	$\dfrac{p,\ q}{\therefore p \wedge q}$
Elim $\vee$	$\dfrac{p \vee q,\ \neg p}{\therefore q}$
Intro $\vee$	$\dfrac{p}{\therefore p \vee q,\ q \vee p}$
Excluded Middle	$\dfrac{}{\therefore p \vee \neg p}$
Elim $\forall$	$\dfrac{\forall x P(x)}{\therefore P(a) \text{ for any } a}$
Intro $\forall$	$\dfrac{\text{Let } a \text{ be an arbitrary} \ldots}{\therefore \forall x P(x)}$
Elim $\exists$	$\dfrac{\exists x P(x)}{\therefore\ P(c) \text{ for some } \textit{special } c}$
Intro $\exists$	$\dfrac{P(c) \text{ for some } c}{\therefore \exists x P(x)}$