Chapter 1

Sample Chapter

1.1 New section

Assumptions {1}	Index 1	Proposition $p\rightarrow q$	Premisses {}	Rule A	Assumptions {1}	Index 1	Proposition ¬q	Prem {}
{2} {1, 2}	2 3	p q	{} {1, 2}	$\begin{matrix} \mathbf{A} \\ \rightarrow \mathbf{E} \end{matrix}$	{2} {1, 2}	2 3	$\neg q \rightarrow \neg p \rightarrow q$ $\neg p \rightarrow q$	{} {1, 2
Assumptions {1}	Index 1	Proposition $\neg q$	Premisses {}	Rule A	Assumptions {1}	Index 1	Proposition $p \rightarrow q$	Prem {}
{2} {3} {1, 2} {1, 2, 3} {1, 2}	2 3 4 5 6	$ \neg q \rightarrow \neg p \rightarrow q \neg p \neg p \rightarrow q q \neg p \rightarrow q $	{} {} {1, 2} {3, 4} {5}	$\begin{array}{c} A \\ A \\ \rightarrow E \\ \rightarrow E \\ \rightarrow I \end{array}$	{2} {3} {1, 3} {1, 2, 3}	2 3 4 5	$ \begin{array}{c} q \rightarrow r \\ p \\ q \\ r \end{array} $	{} {} {1, 3 {2, 4
Assumptions {1}	Index 1	Proposition $p \rightarrow q \rightarrow r$	Premisses {}	Rule A	Assumptions {1}	Index 1	Proposition $p \rightarrow q \rightarrow r$	Prem: {}
{2} {3} {1, 3} {2, 3} {1, 2, 3}	2 3 4 5 6	$\begin{array}{c} p \rightarrow q \\ p \\ q \rightarrow r \\ q \\ r \end{array}$	{} {} {1, 3} {2, 3} {4, 5}	$\begin{matrix} A \\ A \\ \rightarrow E \\ \rightarrow E \\ \rightarrow E \end{matrix}$	{2} {3} {2, 3} {1, 3} {1, 2, 3}	2 3 4 5 6	$\begin{array}{c} p \rightarrow q \\ p \\ q \\ q \rightarrow r \\ r \end{array}$	{} {} {2, 3} {1, 3} {4, 5}

					Assumptions	Index	Proposition
Assumptions	Index	Proposition	Premisses	Rule	{1}	1	$\mathbf{p}{\rightarrow}\mathbf{q}{\rightarrow}\mathbf{r}$
{1}	1	$\neg q$	{}	A	{2}	2	p
{2}	2	$p{ o}q$	{}	A	{3}	3	$\neg r$
{3}	3	p	{}	A	$\{1, 2\}$	4	$q{ ightarrow} r$
$\{2, 3\}$	4	q	$\{2, 3\}$	\rightarrow E	{5 }	5	q
$\{1, 2, 3\}$	5	$q \wedge q$	$\{1, 4\}$	$\wedge I$	$\{1, 2, 5\}$	6	\mathbf{r}
$\{1, 2\}$	6	$\neg p$	$\{3, 5\}$	$\neg I$	$\{1, 2, 3, 5\}$	7	$r \land \neg r$
					$\{1, 2, 3\}$	8	$\neg q$
Assumptions	Index	Proposition	Premisses	Rule	Assumptions	Index	Proposition
{1}	1	$\mathbf{p} {\to} \neg \mathbf{q}$	{}	A	{1}	1	$\neg p {\rightarrow} q$
{2}	2	q	{}	A	{2}	2	$\neg q$
{3}	3	p	{}	A	{3}	3	$\neg p$
$\{1, 3\}$	4	$\neg q$	$\{1, 3\}$	\rightarrow E	$\{1, 3\}$	4	q
$\{1, 2, 3\}$	5	$q \land \neg q$	$\{2, 4\}$	$\wedge I$	$\{1, 2, 3\}$	5	$q \wedge \neg q$
$\{1, 2\}$	6	$\neg p$	${3, 5}$	¬I	$\{1, 2\}$	6	p
Assumptions	Index	Proposition	Premisses	Rule	Assumptions	Index	Proposition
{1}	1	$p \rightarrow q$	{}	A	{1}	1	$p \rightarrow q \rightarrow r$
{2}	2	$\neg q$	{}	A	{2}	2	q
$\{3\}$	3	p	{}	A	{3}	3	p
$\{1, 3\}$	4	q	$\{1, 3\}$	\rightarrow E	$\{1, 3\}$	4	$q{ ightarrow} r$
$\{1, 2, 3\}$	5	$q \wedge \neg q$	$\{2, 4\}$	$\wedge I$	$\{1, 2, 3\}$	5	r
$\{1, 2\}$	6	$\neg p$	${3, 5}$	$\neg I$	$\{1, 2\}$	6	$\mathrm{p}{\rightarrow}\mathrm{r}$
{1}	7	$\neg q \rightarrow \neg p$	{6 }	\rightarrow I	{1}	7	$q{\rightarrow}p{\rightarrow}r$

Assumptions	Index	Proposition	Premisses	Rule
{1}	1	$q{ ightarrow} r$	{}	A
{2}	2	$\neg q \rightarrow \neg p$	{}	A
{3}	3	p	{}	A
{4}	4	$\neg q$	{}	A
$\{2, 4\}$	5	$\neg p$	$\{2, 4\}$	\rightarrow E
$\{2, 3, 4\}$	6	$p \land \neg p$	$\{3, 5\}$	$\wedge I$
$\{2, 3\}$	7	q	$\{4, 6\}$	$\neg \mathrm{E}$
$\{1, 2, 3\}$	8	r	$\{1, 7\}$	\rightarrow E
$\{1, 2\}$	9	$p{ ightarrow} r$	{8}	\rightarrow I
{1}	10	$(\neg q \rightarrow \neg p) \rightarrow p \rightarrow r$	{9}	\rightarrow I

Index	Proposition
1	p
2	$\neg (q \rightarrow r) \rightarrow \neg p$
3	$\neg r$
4	q
5	$q{ ightarrow} r$
6	r
7	$r \land \neg r$
8	$\neg (q \rightarrow r)$
9	$\neg p$
10	$p \land \neg p$
11	$\neg q$
12	$\neg r \rightarrow \neg q$
13	$(\neg (q \rightarrow r) \rightarrow \neg r)$
	1 2 3 4 5 6 7 8 9 10 11 12