

DRŽAVNO NATJECANJE IZ LOGIKE 2020.
B KATEGORIJA
RJEŠENJA

Zadatak 1.

Neka moguća rješenja (beskonačno je mnogo različitih točnih rješenja):

1. $I \vee N$
2. $N \rightarrow I$
3. $I \vee N$
4. $I \rightarrow I$
5. $I \vee N$

Ukupno 15 bodova.

Zadatak 2.

$$\begin{array}{c}
\underline{\neg(\forall x(\forall zRxz \rightarrow \neg\forall zSzx) \rightarrow (\forall y\forall wSyw \rightarrow \forall x\forall y\neg(\forall wRyw \vee \forall wRwx)))}\checkmark \\
\quad \underline{\forall x(\forall zRxz \rightarrow \neg\forall zSzx)} \\
\quad \underline{\neg(\forall y\forall wSyw \rightarrow \forall x\forall y\neg(\forall wRyw \vee \forall wRwx))}\checkmark \\
\quad \quad \underline{\forall y\forall wSyw} \\
\quad \quad \underline{\neg\forall x\forall y\neg(\forall wRyw \vee \forall wRwx)}\checkmark \\
\quad \quad \underline{\neg\forall y\neg(\forall wRyw \vee \forall wRaw)}\checkmark \\
\quad \quad \underline{\neg\neg(\forall wRbw \vee \forall wRaw)}\checkmark \\
\quad \quad \underline{\forall wRbw \vee \forall wRaw}\checkmark \\
\quad \quad \swarrow \quad \searrow \\
\quad \quad \underline{\forall wRbw} \qquad \underline{\forall wRaw} \\
\quad \quad \underline{\forall zRbz \rightarrow \neg\forall zSzb}\checkmark \qquad \underline{\forall zRaz \rightarrow \neg\forall zSza}\checkmark \\
\quad \quad \swarrow \quad \searrow \qquad \swarrow \quad \searrow \\
\quad \quad \underline{\neg\forall zRbz}\checkmark \quad \underline{\neg\forall zSzb}\checkmark \quad \underline{\neg\forall zRaz}\checkmark \quad \underline{\neg\forall zSza}\checkmark \\
\quad \quad \underline{\neg Rbc} \qquad \underline{\neg Scb} \qquad \underline{\neg Rac} \qquad \underline{\neg Sca} \\
\quad \quad \underline{Rbc} \qquad \underline{\forall wScw} \qquad \underline{Rac} \qquad \underline{\forall wScw} \\
\quad \quad \underline{\times} \qquad \underline{Scb} \qquad \underline{\times} \qquad \underline{Sca} \\
\qquad \qquad \times \qquad \qquad \qquad \times
\end{array}$$

Iskaz je valjan.

Ukupno 62 boda.

Zadatok 3.

	s_1	s_2	s_3
$\Box \exists x \neg x = c$	N	N	I
$\Box \neg \exists x \exists y \neg x = y \vee \Box \forall x (Kx \rightarrow Bx)$	N	I	N
$\neg \Box \neg \exists x \exists y ((Tx \wedge Ty) \wedge \neg x = y)$	N	N	N
$\Box \neg \exists x (Cx \wedge Tx) \rightarrow \exists x (Cx \wedge Kx)$	I	I	N
$\Box (\forall x (Kx \rightarrow Cx) \leftrightarrow \Box \forall x (Bx \rightarrow Tx))$	I	I	I
$\exists x (Tx \wedge \forall y (Ty \rightarrow x = y)) \rightarrow \Box \exists x Bx$	N	I	I
$\Box (\exists x Bx \wedge \exists x Kx) \vee \Box \Box \neg (\exists x \neg (Cx \rightarrow Cx) \rightarrow \phi)$	N	N	I
$\Box \phi \rightarrow \phi$	I	I	?
$\Box \phi \rightarrow \Box \Box \phi$	I	?	?
$\Box (\phi \rightarrow \psi) \rightarrow (\Box \phi \rightarrow \Box \psi)$	I	I	I

Ukupno 60 bodova.