

~~PROBLEM~~
FIND CANONICAL FORM OF

ALL GAMES w/ DEPTH ≤ 2

R-OPTIONS

\emptyset \emptyset -1 1 $*$ $\emptyset, *$

	\emptyset	\emptyset	-1	1	$*$	$\emptyset, *$	
\emptyset							
\emptyset							
1							
-1							
$*$							
$\emptyset, *$							

PROVE $* < 1$

WTS $* < 1$?

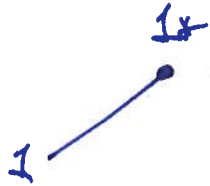
IFF $*** < 1*$?

$0 < 1*$?

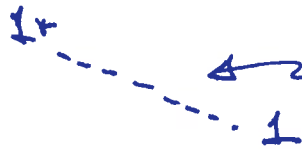
$$= \{1* | 1\}$$

$$1* = \{1 | 1\}$$

L TO PLAY



R TO PLAY



ONLY R-OPTION



$\blacksquare * < 1$

PROVE $0 || *$

$0 || * ?$

WTS $0 \neq *$
 (A)

$0 \neq *$
 (B)

$0 \neq *$
 (C)

WTS $*$ NOT L-PSN

EXERCISE

$*$ NOT A P-PSN

PROOF: R PLAYS 1ST AND WINS

E.G.



$\blacksquare 0 || *$

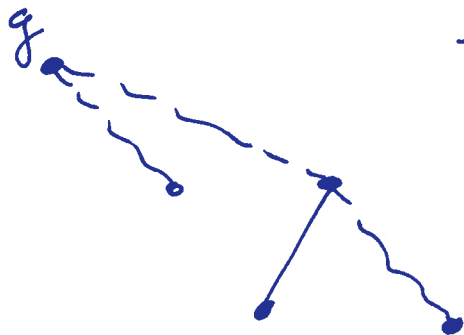
~~***~~

PROVE THAT

$$g = \{ | \emptyset, * \} = h = \{ | \emptyset \}$$

ANS:

REVERSING



- ASSUME R PLAYS TO *

THEN L REVERSES TO \emptyset .

(SINCE $\emptyset > g$).

$$\text{SO } g = \{ | \emptyset, \{ \} \}$$

$$= \{ | \emptyset \}$$

$$= h$$

$$= -1$$



PROVE:

$$g = \{ \emptyset, * \mid 1 \}$$

$$= \{ \emptyset \mid 1 \}$$

PROOF

IF L PLAYS TO *,

R CAN REVERSE TO \emptyset (SINCE $g > \emptyset$).

$$\text{SO } g = \{ \emptyset, \{ \} \mid 1 \}$$

$$= \{ \emptyset \mid 1 \}$$

$$= \frac{1}{2}$$

EXERCISE:

$$g = \{ \emptyset, * \mid * \}$$

PROVE $g = \{ \emptyset, \# \mid * \}$

BY USING CAN. FORM II (REVERSING)

EXERCISE: CAN. FORM OF CLOBBER(0X0X0X0X)?

- SYMMETRIC

- CONSIDER X-MOVES

(A) X MOVES ←

- 0X0X0X = ∅

- 0XX 0X0X = ↑ + ± {*, ↑}

- 0X0XX 0X = * + * = ∅

- 0X0X0XX

(B) X MOVES →

- XX0X0X

- 0X0 XX0X = * ↓ ± = ↓

- 0X0X0

###

HINT

$$\text{CLOBBER}(a8) = \pm \left\{ 05, (0XX + aT) \right\}$$

PROVE : 22-GAMES W
DEPTH ≤ 2

R OPTIONS

	\emptyset	\emptyset	-1	1	$*$	$\emptyset, *$
\emptyset	\emptyset					
\emptyset	1	$*$				
1	2	$\{1 \emptyset\}$	± 1			
-1	\emptyset	$-\frac{1}{2}$	-1^*	\emptyset		
$*$	\emptyset	\downarrow	$\{+ -1\}$	\emptyset	\emptyset	
$\emptyset, *$	-1	\uparrow^*	$\{\emptyset, + -1\}$	$\frac{1}{2}$	\uparrow	$*2$