

function ALPHA-BETA-SEARCH(*game*, *state*) **returns** an action

$\text{player} \leftarrow \text{game.TO-MOVE}(\text{state})$

$\text{value}, \text{move} \leftarrow \text{MAX-VALUE}(\text{game}, \text{state}, -\infty, +\infty)$

return *move*

function MAX-VALUE(*game*, *state*, α , β) **returns** a (*utility*, *move*) pair

if *game.IS-TERMINAL*(*state*) **then return** *game.UTILITY*(*state*, *player*), *null*

$v \leftarrow -\infty$

for each *a* **in** *game.ACTIONS*(*state*) **do**

$v2, a2 \leftarrow \text{MIN-VALUE}(\text{game}, \text{game.RESULT}(\text{state}, a), \alpha, \beta)$

if $v2 > v$ **then**

$v, \text{move} \leftarrow v2, a$

$\alpha \leftarrow \text{MAX}(\alpha, v)$

if $v \geq \beta$ **then return** v, move

return v, move

function MIN-VALUE(*game*, *state*, α , β) **returns** a (*utility*, *move*) pair

if *game.IS-TERMINAL*(*state*) **then return** *game.UTILITY*(*state*, *player*), *null*

$v \leftarrow +\infty$

for each *a* **in** *game.ACTIONS*(*state*) **do**

$v2, a2 \leftarrow \text{MAX-VALUE}(\text{game}, \text{game.RESULT}(\text{state}, a), \alpha, \beta)$

if $v2 < v$ **then**

$v, \text{move} \leftarrow v2, a$

$\beta \leftarrow \text{MIN}(\beta, v)$

if $v \leq \alpha$ **then return** v, move

return v, move