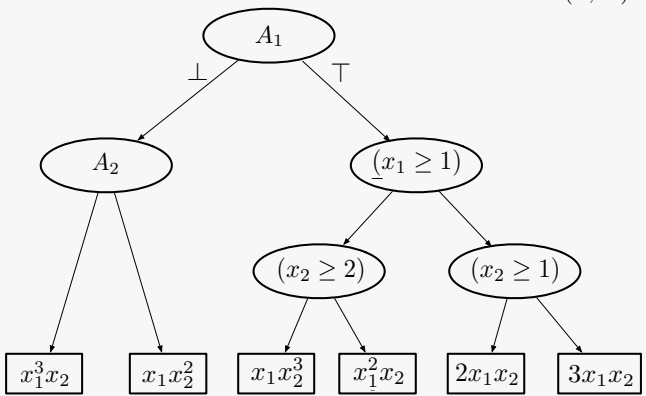
a

$\varphi \stackrel{def}{=} \top$, $\chi \stackrel{def}{=} [\![x_1 \in [0,2]]\!] \wedge [\![x_2 \in [0,3]]\!]$

b

$w(\mathbf{x}, \mathbf{A})$

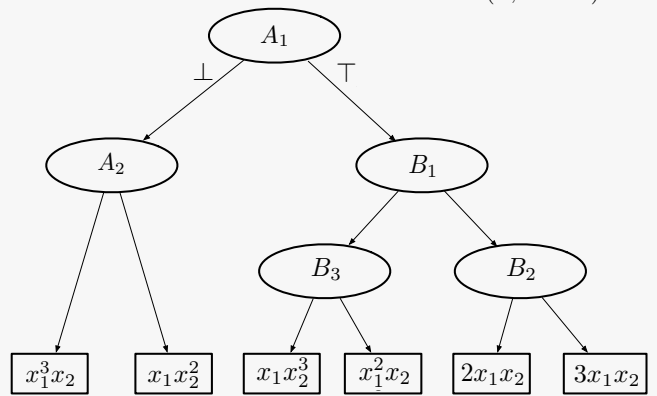


c

$\varphi^*(\mathbf{x}, \mathbf{A} \cup \mathbf{B}) \stackrel{def}{=} \varphi \wedge \chi \wedge B_1 \leftrightarrow (x_1 \geq 1) \wedge B_2 \leftrightarrow (x_2 \geq 1) \wedge B_3 \leftrightarrow (x_2 \geq 2)$

d

$w^*(\mathbf{x}, \mathbf{A} \cup \mathbf{B})$



e

Assignment	*Range*	w
$\{\ A_1,\ A_2,\ B_1,\ B_2,\ B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [2,3]]\!]$	$x_1^2 x_2$
$\{\ A_1,\ A_2,\ B_1,\ B_2, \neg B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [1,2]]\!]$	$x_1^2 x_2$
$\{\ A_1,\ A_2,\ B_1, \neg B_2, \neg B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [0,1]]\!]$	$x_1^3 x_2$
$\{\ A_1,\ A_2, \neg B_1,\ B_2,\ B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [2,3]]\!]$	$x_1 x_2^2$
$\{\ A_1,\ A_2, \neg B_1,\ B_2, \neg B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [1,2]]\!]$	$x_1 x_2^3$
$\{\ A_1,\ A_2, \neg B_1, \neg B_2, \neg B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [0,1]]\!]$	$x_1 x_2^3$
$\{\ A_1, \neg A_2,\ B_1,\ B_2,\ B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [2,3]]\!]$	$x_1^2 x_2$
$\vdots$ [*same as with* $\{A_1, A_2\}$]	$\vdots$	$\vdots$
$\{\ A_1, \neg A_2, \neg B_1, \neg B_2, \neg B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [0,1]]\!]$	$x_1 x_2^3$
$\{\neg A_1,\ A_2,\ B_1,\ B_2,\ B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [2,3]]\!]$	$2x_1 x_2$
$\{\neg A_1,\ A_2,\ B_1,\ B_2, \neg B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [1,2]]\!]$	$2x_1 x_2$
$\{\neg A_1,\ A_2,\ B_1, \neg B_2, \neg B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [0,1]]\!]$	$2x_1 x_2$
$\{\neg A_1,\ A_2, \neg B_1,\ B_2,\ B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [2,3]]\!]$	$2x_1 x_2$
$\{\neg A_1,\ A_2, \neg B_1,\ B_2, \neg B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [1,2]]\!]$	$2x_1 x_2$
$\{\neg A_1,\ A_2, \neg B_1, \neg B_2, \neg B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [0,1]]\!]$	$2x_1 x_2$
$\{\neg A_1, \neg A_2,\ B_1,\ B_2,\ B_3\}$	$[\![x_1 \in [1,2]]\!], [\![x_2 \in [2,3]]\!]$	$3x_1 x_2$
$\vdots$ [*same as with* $\{\neg A_1, A_2\}$]	$\vdots$	$\vdots$
$\{\neg A_1, \neg A_2, \neg B_1, \neg B_2, \neg B_3\}$	$[\![x_1 \in [0,1]]\!], [\![x_2 \in [0,1]]\!]$	$3x_1 x_2$