

# Machine Learning

## Exercise sheet 3

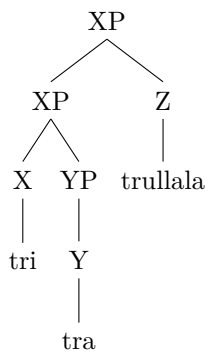
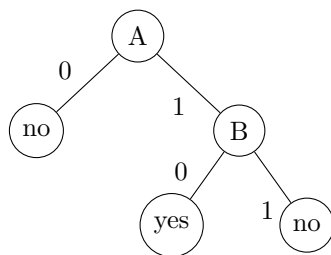
Gruppe 9:  
Hauke Wree and Fridtjof Schulte Steinberg

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### Exercise 1 (Decision trees for Boolean functions):

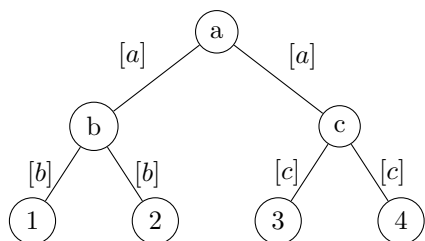
a)

A	B	$A \wedge \neg B$
0	0	0
0	1	0
1	0	1
1	1	0



b)

A	B	C	$B \wedge C$	$A \vee [B \wedge C]$
0	0	0	0	0
0	0	1	0	0
0	1	0	0	0
0	1	1	1	1
1	0	0	0	1
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1



c)

A	B	$AXORB$
0	0	0
0	1	1
1	0	1
1	1	0

d)

A	B	C	$B \wedge C$	$A \vee [B \wedge C]$
0	0	0	0	0
0	0	1	0	0
0	1	0	0	0
0	1	1	1	1
1	0	0	0	1
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

e)

A	B	C	D	$A \wedge B$	$C \wedge D$	$[A \wedge B] \vee [C \wedge D]$
0	0	0	0	0	0	0
0	0	0	1	0	0	0
0	0	1	0	0	0	0
0	0	1	1	0	1	1
0	1	0	0	0	0	0
0	1	0	1	0	0	0
0	1	1	0	0	0	0
0	1	1	1	0	1	1
1	0	0	0	0	0	0
1	0	0	1	0	0	0
1	0	1	0	0	0	0
1	0	1	1	0	1	1
1	1	0	0	1	0	1
1	1	0	1	1	0	1
1	1	1	0	1	0	1
1	1	1	1	1	1	1

## Exercise 2 (Decision tree learning)

a)

i

