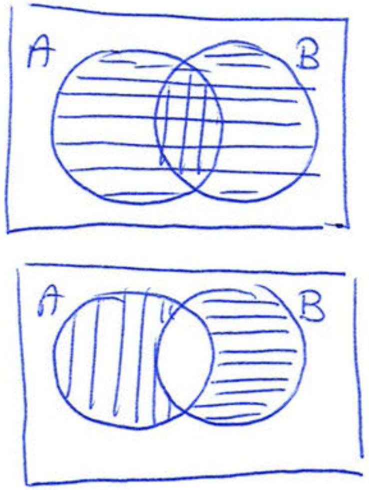
9/3'15 FI 1

1 a $A\setminus B = A\cap B^c$

b

symmetrisch verschil!!



$A\cup B$ ≡
$A\cap B$ |||
verschil: alleen ≡

$A\setminus B$ ||||
$B\setminus A$ ≡
vereniging gearceerd

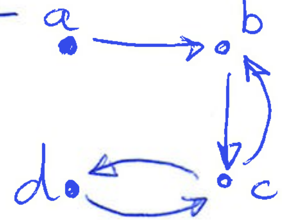
gebieden gelijk

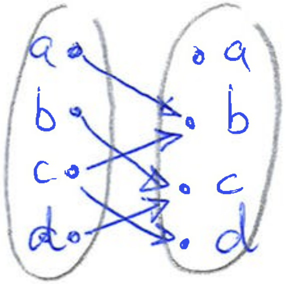
⊆ herschreven: $(A\cup B)\cap A^c = B\cap A^c$

$(A\cup B)\cap A^c =$ distr.
$(A\cap A^c)\cup(B\cap A^c) =$ complem.
$\emptyset \cup(B\cap A^c) =$ nul
$B\cap A^c$

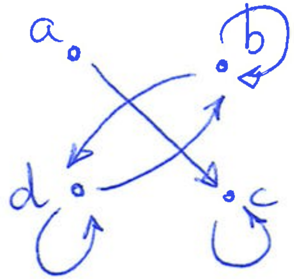
$(a,b)\sqsubset(c,d)\sqsubset(e,f)$
dan $(a,b)\sqsubset(e,f)$
want $a\le c\le e$ en $b\ge d\ge f$.

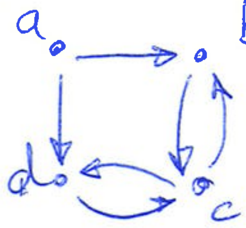
2 a





b



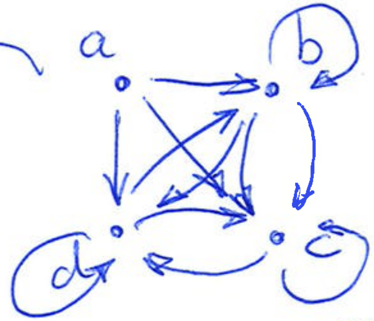


⊆ $\{a,b,c,d\}\times\{b,c,d\}$
alle paden (ter lengte ≥ 1)

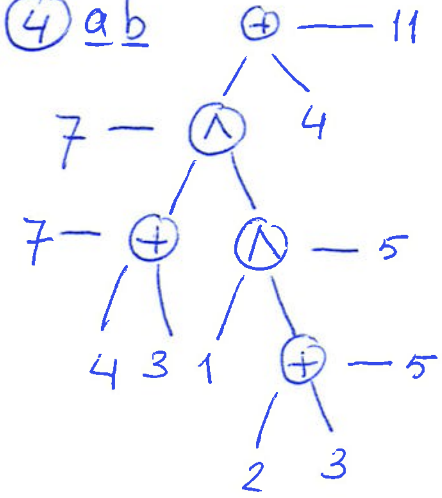
3 tweetallen!

b reflexief $(a,b)\sqsubset(a,b)$
ja. $a\le a$ en $b\ge b$

antisym $(a,b)\sqsubset(c,d)$
en $(c,d)\sqsubset(a,b)$ dan
$(a,b)=(c,d)$
ja. $a\le c$ en $b\ge d$
resp. $c\le a$ en $d\ge b$
dus $a=c$ en $b=d$
transitief: ja



4 a b



⊆ f(blad) = 1
f(knoop) = f(links) + f(rechts)

bij 7 b als een brug(u,v)
onderdeel van een cykel is
verdwijnen geen paden,
want er is een ander pad

9/3'15 FI1

5 a $\sum_{k=0}^{28} 3k-7 = \frac{29(-7+77)}{2}$

b basis $n=0$ $a_0 = 2 = (-1)^0 + 2^0$

$n=1$ $a_1 = 1 = (-1)^1 + 2^1$ (klopt)

inductiestap aanname klopt t/m n.
verifieer de formule voor n+1:

$$a_{n+1} \underset{\text{def}}{=} a_n + 2a_{n-1} \underset{\text{aanname}}{=}$$

$$(-1)^n + 2^n + 2\cdot(-1)^{n-1} + 2\cdot 2^{n-1} =$$

$$(1-2)(-1)^n + 2\cdot 2^n = (-1)^{n+1} + 2^{n+1}$$ (ok!)

6 a

x	0	1	2	3	4	5	6	7	8	9	10	11
x^2	0	1	4	9	4	1	0	1	4	9	4	1

(tabel is symm: $(k-x)^2 = k^2 - 2kx + x^2 \equiv x^2 \mod k$.)

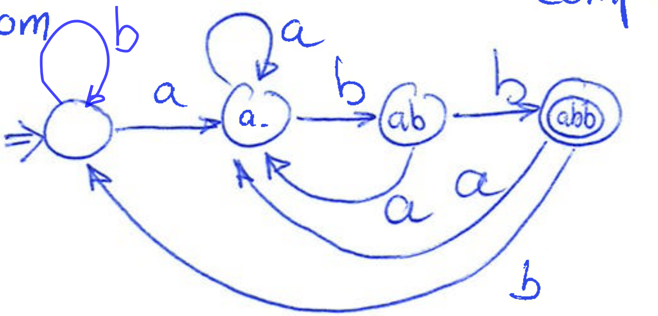
b $17 \equiv 5$ $17^{331} \equiv 5^{331} \equiv (5^2)^{165} \cdot 5 \equiv 1 \cdot 5 = 5$

$4^k \equiv 4$ voor alle k $4^{122} \equiv 4$ dus $17^{331} + 4^{122} \equiv 5 + 4 = 9$

7 a $n-1 \le e \le \frac{n\cdot(n-1)}{2}$

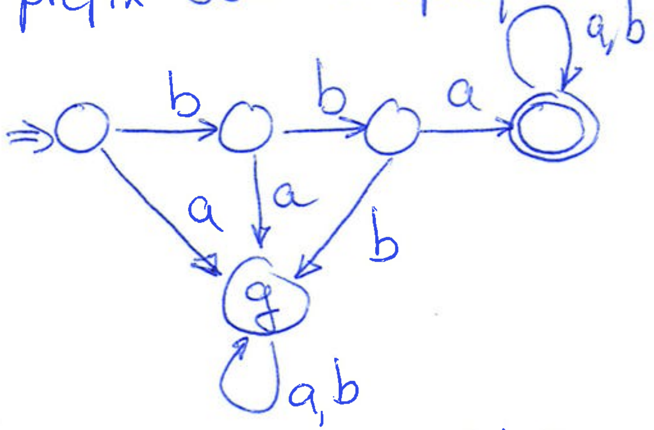
boom compleet

8 a



"hoever op weg naar abb"

b prefix bba – spiegelbeeld: begint met bba



$\subseteq \{a,b\}^* . \{abb\}$ $(a+b)^* abb$

$\{a,b\}^* . \{a, ab, bbb\} \cup \{\lambda, b, bb\}$

verkeerd eind. te kort

complement: eindigt niet op abb