• $(\forall n\in\mathbb{N})(\forall k\in\mathbb{N})\ R^{n}\circ R^{k} = (\overbrace{R\circ\dots\circ R}^{n \text{ de } R})\circ(\overbrace{R\circ\dots\circ R}^{k \text{ de } R}) =$

$= \underbrace{R\circ R\circ\dots\circ R}_{n+k \text{ de } R} = R^{n+k} = (\underbrace{R\circ\dots\circ R}_{k \text{ de } R})\circ(\underbrace{R\circ\dots\circ R}_{n \text{ de } R}) = R^{k}\circ R^{n}$

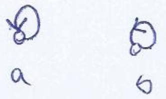
• $(\forall n,k\in\mathbb{N})\ R^{-n}\circ R^{-k} = (R^{-1})^{n}\circ(R^{-1})^{k} = (R^{-1})^{n+k} = R^{-n-k} =$

$= (R^{-1})^{k}\circ(R^{-1})^{n} = R^{-k}\circ R^{-n}$

Ex:

$A = \{a,b\}$, $R\subseteq A^2$, $S\subseteq A^2$

Δ_A - mulț. buclelor:



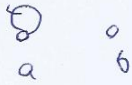
$R = \{(a,a)\}$:

$\Downarrow$ interșanjabile

caz particular $\to$ $R^{-1} = R$:

$\Downarrow$ interșanjabile

$R\circ R^{-1} = R^{-1}\circ R = R$:



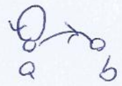
$\subsetneq \Delta_A = R^{0} = R^{1-1} = R^{-1+1}$

$\Downarrow$

R^1

$S := \{(a,a),(a,b)\}$

S:

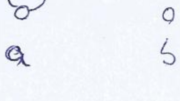


$\Rightarrow$ S^{-1}:

$S\circ S^{-1}$:

$= A^2 \supsetneq \Delta_A = S^{0} = S^{1-1}$

$S^{-1}\circ S$:



$\subsetneq \Delta_A = S^{0} = S^{-1+1}$