1 Ned Aa B sa moring a Rje relacia na morine Ax B. Ned Y & B. Idele, their intelies make morinami Ya R[R"[Y]] plaka.

Rujeme

Ulariene, se an jehra x insliene neplati pre baide A, B, Ra V.

· Ned A= Ø, B = £ 23, R = Ø, Y = £ 23.

Polom R[R-1[Y]] = R[R-1[£23]] = R[Ø] = Ø, Laksa Y = R[R-1[£23]].

· Ned A= 823, B = 81,33, R = 8<2;1>, c2;3>3, Y = 813.

Rolom R[RTY]] = R[R¹[813] = R[823] = \$1,33, data y ≠ R[R¹[818]].

2) Ned AaB sú mnoziny a R je relacia na mnozine A x B Nech M1, X2 EA. Lishle, bloré instrixie medri mnozinami R[X1UX2]a R[X1JUREX2] platia.

Riesenie:

Waxeme, se obe instince plata:

Nech y & B. Polom plate:

y & R [X 1 U X 2]

all Ix ((x & X 1 U X 2) 1 < x , y > & R)

(obefinicia obruhých soloziek),

all Ix ((x & X 1 V x & X 2) 1 < x , y > & R)

(obefinicia specholema),

all Ix ((x & X 1 1 < x , y > & R) V (x & X 2 1 < x , y > & R)

(obshosti obshibalisty konjumzue),

all Ix ((x & X 1 1 < x , y > & R) V Ix (x & X 2 1 < x , y > & R)

(obshibucia sombificatora),

all y & R [x 1] V y & R [X 2]

(obefinicia obruhých složiek),

all y & R [X 1] U R [X 2]

(obefinicia sjednolema).

Waxahi sme, ze vsiby proby mnoxiny R[X1UX2] sú aj probami mnoxing
R[X1]UR[X2], a kedže sme použihi iba etniralenhu smolenia, bude to platit
aj opaine. Jasae plati R[X1UX2] = R[X1] UR[X2] a R[X1] UR[X2] = R[X1UX2],
a to tex obladu na volbu A, B, R, X, a X2.

3 Nech AaB su musking a R je relacia na muskine Ax B. Nech

Y₁, Y₂ ⊆ B. Lishile, kloré inkluxie medki nasledujúcimi muskirami platia:
a) R⁻¹[Y₁UY₂] a R⁻¹[Y₁] UR⁻¹[Y₂];
b) R⁻¹[Y₁NY₂] a R⁻¹[Y₁] ∩ R⁻¹[Y₂];

Riesema:

a) Waixene, re che inclusie plalia:

Nech xEA. Polom plali:

VER-1[y1 Uy2]

all = y((y E Y1 U Y2) 1 < x, y> ER)

(olifimicia provjeh soloziel),

all = y((y E Y1 V Y2) 1 < x, y> ER)

(olifimicia spielrolemia),

all = y((y E Y1 N < x, y> ER) V(y E Y2 1 < x, y> ER))

(vlashost disbribativity konjundaje),

all = y((y E Y1 1 < x, y> ER) V(y E Y2 1 < x, y> ER))

(olisbribaia branlifisorbea),

all = x ER-1[y1] UR-1[y2]

(olifimicia spielrolemia).

Ukásali sme, ne všelby mnoziny R-1[Y1UY2] sú aj probeoni mnoziny R-1[Y1] UR-1[Y2], a kedne sme pounili ila etviralentné burdenia, bude so platil aj opaine. Takne plati R-1[Y1] UR-1[Y2] a R-1[Y1] UR-1[Y2], tex chladu ma rolin A, B, R, Y1 a Y2.

b) Maxeme, xe prva je podmnozina obruhej:

Ned x &A. Bolom plah:

X & R^-1 [Y_1 | Y_2]

all Iy ((y & Y_1 | N | Y_2) | N < x, y > & R)

(definicia prvých složile),

all Iy ((y & Y_1 | N | Y_2) | N < x, y > & R)

C definicia prienibu),

all Iy ((y & Y_1 | N < x, y > & R) | N (y & Y_2 | N < x, y > & R))

(vlastnosti bonjumbeie),

2tv Iy (y & Y_1 | N < x, y > & R) | N Iy (y & Y_2 | N < x, y > & R)

Colistribucia brandifiserbora),

all x & R^-1 [Y_1] | N & R^-1 [Y_2]

Colefinicia prienibu).

Wharsali ome, se vsilly proby mnoxing R-I[Y1NY2] sui aj prokami mnoxing R-I[Y1] N R-I[Y2], ratio plati R-I[Y1N Y2] S R-I[Y1] N R-I[Y2] a la bez oblader ma voller A, B, R, Y1 a Y2.

• Waxeme, se druha nemusi byt podmrezina povoj:

Nech A= £13, B= £1,53, R=(€1,2), €1,3) 3, V1= £23, V2= £33.

Rolom R-1[YIN R-1[Y2] = R-1[£23] ∩ R-1[£33] = £13 ∩ £13 = £13, ale

R-1[Y1 ∩ Y2] = R-1[£23 ∩ £33) = R-1[Ø] = Ø, cine neglati R-1[Y1 ∩ Y2] =

R-1[Y1] ∩ R-1[Y2] pre saxchi volbu A, B, R, V1 a V2.