Matematika Diskrit

Date

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1. Apakah relasi berikut pd $\{1,2,3,4\}$ refleksif?
sebutkan alasannya?

- $R = \{(1,1),(1,2),(2,3),(3,3),(4,4)\}$
  ⇒ Tdk termasuk refleksif krn didalamnya tidak trdpt salah satu elemen yaitu (2,2).
- $R = \{(1,1),(2,2),(3,3),(4,4)\}$
  ⇒ Termasuk refleksif karena trdpt semua syarat elemen (a,a)
- $R = \{(1,1),(2,2),(3,3)\}$
  ⇒ Tdk termasuk refleksif krn didalamnya tidak ada elemen (4,4)

2. Apakah relasi berikut pd $\{1,2,3,4\}$ simetris / asimetris?
sebutkan alasannya?

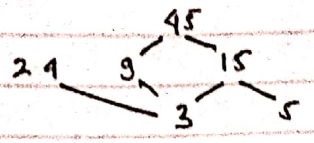
- $R = \{(1,1),(1,2),(2,1),(3,3),(4,4)\}$
  ⇒ Termasuk simetris krn apabila ~~ada~~ memenuhi syarat jika ada elemen (a,b) maka juga terdapat (b,a)
- $R = \{(1,1)\}$
  ⇒ Termasuk antisimetris krn jika ada elemen (a,b) maka juga terdapat (b,a) hanya jika a=b, spti (1,1)
- $R = \{(1,3),(3,2),(2,1)\}$
  ⇒ Tidak setangkup karena ada (a,b) tetapi tdk terdapat (b,a)
- $R = \{(4,4),(3,3),(1,4)\}$
  ⇒ Termasuk antisimetris karena jika ada elemen (a,b) maka juga terdapat (b,a) hanya jika a = b, seperti (4,4)

3. Apakah relasi berikut pd $\{1,2,3,4\}$ transitif?
sebutkan alasan?

- $R = \{(1,1),(1,2),(2,2),(2,1),(3,3)\}$
  ⇒ Termasuk transitif karena disaat ada (a,b) dan (b,c) maka trdpt juga (a,c) spti (2,1) ≠ (1,2), (2,2)
- $R = \{(1,3),(3,2),(2,1)\}$
  ⇒ Tdk termasuk transitif karena ada (1,3),(3,2) tetapi tdk ada (1,2)
- $R = \{(2,4),(4,3),(2,3),(4,1)\}$
  ⇒ Tdk termasuk transitif karena ada (2,4),(4,1) tetapi tdk ada (2,1)

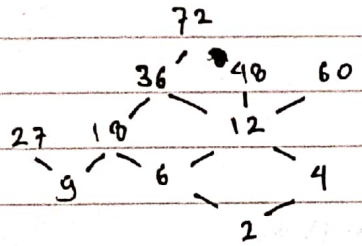
Date

4. poset ({3, 5, 9, 15, 24, 45})



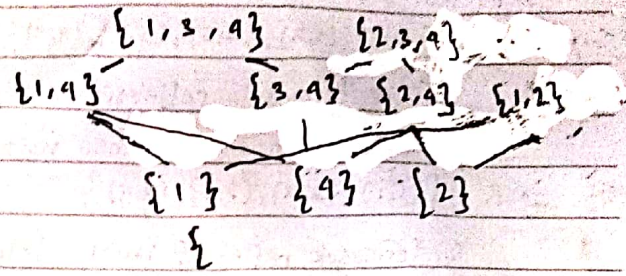
a. max element = 24, 45
b. min element = 3, 5
c. greatest element = tidak ada
d. greatest element = tidak ada
e. Upper bound of {3,5} = {15, 45}
f. least upper bound of {3,5} = {15}
g. All lower bound of {15, 45} = {3, 5, 15}
h. greatest lower bound of {15, 45} = {15}

b. poset ({2, 4, 6, 9, 12, 18, 27, 36, 48, 60, 72})



a. max element = {27, 72, 48, 60}
b. min element = {2, 9}
c. greatest element = tdk ada
d. greatest element = tdk ada
e. Upper bound of {2, 9} = {18, 36, 72}
f. LUB {2, 9} = {18}
g. LB {60, 72} = {2, 4, 6, 12}
h. GLB {60, 72} = {12}

c. Poset ({{1}, {2}, {4}, {1,2}, {1,4}, {2,4}, {3,4}, {1,3,4}, {2,3,4}})



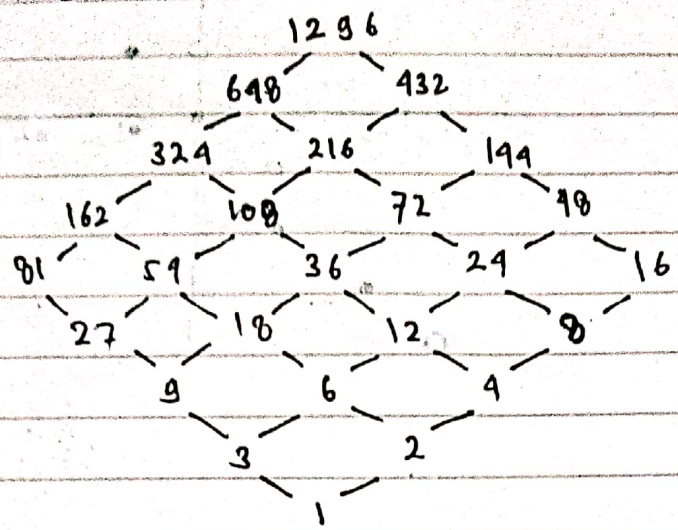
a. max element = {{1,3,4}, {2,3,4}}
b. min element = {{1}, {2}, {4}}
c. greatest element = tidak ada
d. Least element = tidak ada
e. UB {{2}, {4}} = {{2,4}, {2,3,4}}
f. LUB {{2}, {4}} = {2,4}
g. LB {{1,3,4}, {2,3,4}} = {{3,4}, {4}}
h. GLB {{1,3,4}, {2,3,4}} = {{3,4}}

Poset

5. A = {1, 2, 3, 4, 6, 8, 9, 12, 16, 18, 24, 27, 36, 48
54, 72, 81, 108, 144, 162, 216, 324, 432, 648, 1296}

R didefinisikan oleh : "x membagi y"

(a) Diagram Hess



(b) • B = {8, 12, 18, 27}

UB = {216, 432, 648, 1296}

LUB = {216}

LB = {1}

GLB = {1}

• C = {12, 18, 36, 72, 108, 216}

UB = {216, 432, 648, 1296}

LUB = {216}

LB = {1, 2, 3, 6}

GLB = {6}

• D = {6, 12, 18, 24, 36, 54}

UB = {216, 432, 648, 1296}

LUB = {216}

LB = {1, 2, 3, 6}

GLB = {6}

• E = {6, 12, 36, 72}

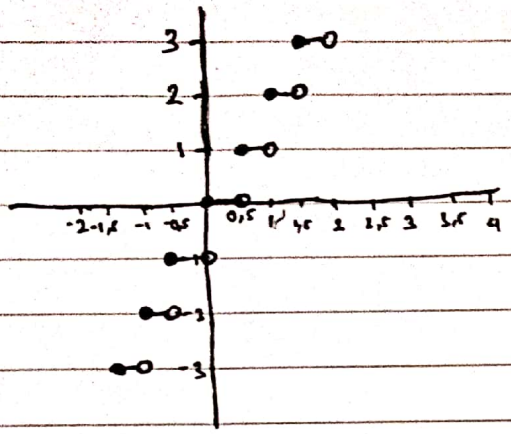
UB = {72, 144, 216, 432, 648, 1296}

LUB = {72}

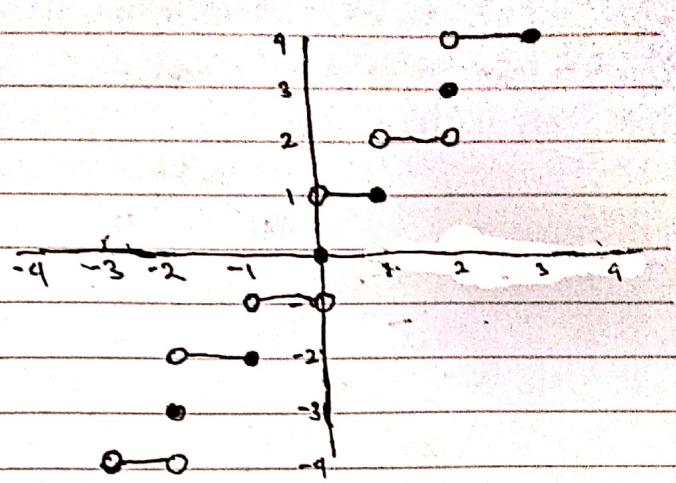
LB = {1, 2, 3, 6}

GLB = {6}

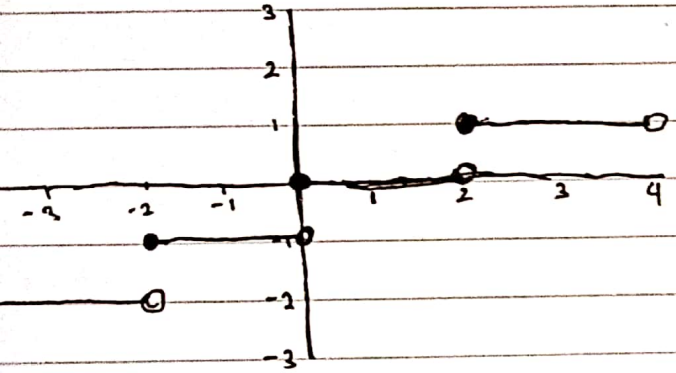
59. Gambar grafik $f(x) = \lfloor 2x \rfloor$



62. gambar grafik $f(x) = \lceil x \rceil + \lfloor x/2 \rfloor$



60. Gambar grafik $F(x) = \lfloor x/2 \rfloor$



61. Gambar grafik $f(x) = \lfloor x \rfloor + \lfloor x/2 \rfloor$