

# HW13a

Saturday, March 4, 2023 5:46 PM

1. Use the relations given below to evaluate the relational expressions or explain why the expression is invalid.

2 are invalid

2 give results

arithmetic operations are lower precedence than select/project/etc.

- a)  $\sigma_{A < 4} Q \times U$
- b)  $\pi_A \sigma_{B < A} Q$
- c)  $\pi_{BE} (R \times \pi_{CE} S)$
- d)  $Q \cup \pi_B R$
- e)  $\pi_{CDE} (\sigma_{B < 2} R \times \rho_{C \leftarrow E} U) - S$

Q:

A	B
5	1
6	1
4	2
3	4

R:

B	C
1	4
2	4
2	5
3	6
3	9

S:

C	D	E
4	1	1
4	2	1
3	3	2
2	4	2

U:

C	D
1	2
2	4

a)  $\sigma_{A < 4} Q$

A	B
3	4

U

C	D
1	2
2	4

a)  $Q \times U$

A	B	C	D
3	4	1	2
3	4	2	4

- b)  $\sigma_{B < A} Q$

A	B
5	1
6	1
4	2

b)  $\pi_A \sigma_{B < A} Q$

A
5
6
4

- c)  $\pi_{CE} S$

C	E
4	1
3	2
2	2

$R \times \pi_{CE} S \Rightarrow$  **INVALID OPERATION**  
both have C Columns

- d)  $\pi_B R$

B
1
2
2
3

d)  $Q \cup \pi_B R \Rightarrow$  **INVALID OPERATION**  
schemes don't match

- e)  $\sigma_{B < 2} R$

B	C
1	4

$\rho_{C \leftarrow E} U$

E	D
1	2
2	4

$\sigma_{B < 2} R \times \rho_{C \leftarrow E} U$

B	C	E	D
1	4	1	2
1	4	2	4

$\pi_{CDE} (\sigma_{B < 2} R \times \rho_{C \leftarrow E} U)$

C	D	E
4	2	1
4	4	2

e)  $\pi_{CDE} (\sigma_{B < 2} R \times \rho_{C \leftarrow E} U) - S$

C	D	E
4	4	2

