Q1 )

a) where (x y) is (A B)

- R union S = {(a b), (a d), (d a)}

- R intersection S = {(a d)}

- R difference S = {(a b), (d a)}

b) R product S = { (a b a d), (a b d a), (a d a d), (a d d a)}

R join S = {(a d a d)}

c) P product Q = {(a1 b1 1 2 d2),(a1 b1 1 3 d3),(a2 b2 2 2 d2),(a2 b2 2 3 d3)}

P join Q = { (a2 b2 2 d2) }

d) selection (c!=1) from P = {(a2 b2 2)}

e) selection (c=3) from P = {} // empty set

f) R intersection S = R – ( R – S)

because (R-S) are the differences between R and S, and when we remove them from R we are left with the similarities.

Q2 )

1. R1 join R2 = R1 intersect R2 : when R1=R2 or when R2 and R1 share no common attributes
2. R1 join R2 = R1 product R2 : in no situations I can think of.
3. R1 projected over A produces |R1| attributes when all elements in A are unique

Q3 )

1. project\_(S)(select\_(P=’Dan’) from (Teaches Join Enrolls)
2. project\_(S)(Enrolls Join Likes)
3. project\_(S)()
4. project\_(S)()