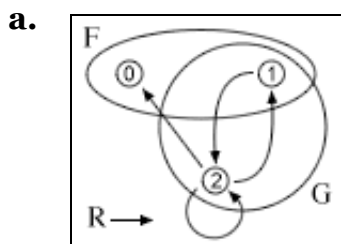# 6.4.x. Exercise questions

1. Each of **a**, **b**, and **c** gives a structure in one of the two sorts of presentation described in this section—by a diagram or by tables. Present each of them in the other way.

   a.

   b.

τ	Fτ
0	T
1	T
2	F

τ	Gτ
0	F
1	F
2	T

R	0	1	2
0	T	T	T
1	F	T	F
2	F	T	T

   c.

τ	Fτ
0	T
1	T
2	F

τ	Gτ
0	F
1	T
2	T

τ	Hτ
0	T
1	F
2	T

R	0	1	2
0	F	T	F
1	T	F	F
2	F	T	F

2. Calculate a truth value for each of the following sentences on the structure used as the chief example in this section (see, for example, Figure 6.4.2-7):

   a. (Fa ∨ Gb) → Rab

   b. R(fca)(fac)

   c. fab = fba

3. Use derivations to check each of the claims below; if a claim of entailment fails, use either tables or a diagram to present a structure that divides an open gap.

   a. a = a → Fa ⇒ Fa

   b. ¬ (Fa ∧ Fb) ⇒ ¬ Fa → ¬ Fb

   c. a = b ∨ b = a ⇒ a = b ∧ b = a

   d. Fa → a = b, ga = b, Ra(ga) → Fa, F(ga) ⇒ Raa → R(ga)(ga)

   e. a = b → Rac, ¬ a = b → Rbc ⇒ Rbc

Glen Helman 01 Aug 2004