1. F = {C->A, E->F, G->D, EG->B, EG->B, EG->C, FG->E}

    a. $(FG)^+$ = {F,G,E,D,C,B,A}

    b. FG is a super key because it identifies all of the tuples in the relation, although it is minimal.

    c. No, F+ = {F} where R = {A,B,C,D,E,F,G}

    d. No, G+ = {G,D} where R = {A,B,C,D,E,F,G}

    e. FG can be a primary key, because it contains minimal attributes to access all tuples in the relation.

2. Since both relations have a defined primary key and have a relationship, they must agree on the values of some attribute within each of their relations. For example, relation R and relation S have some attribute that have the same values, and the primary keys of each relation can be used to identify those values. Thus $\alpha \rightarrow \beta$ and $\beta \rightarrow \alpha$, implying a one-to-one relationship.