Flows and cycles in graphs – Exercises 7

1. Suppose a graph G has a double cover by circuits C_1, ..., C_k. Is there a circular 2-cell embedding of G on some surface so that the face boundaries are exactly the circuits C_1, ..., C_k?

    (a) G is cubic

    (b) G is a general graph

2. Suppose every cubic bridgeless graph has a 6-cycle 4-cover, that is a collection of six cycles that cover every edge exactly four times. (This is conjectured to be true but not known.) Then every bridgeless graph has a 6-cycle 4-cover.

3. Prove that a minimal counterexample to CDC does not contain five-cycles.