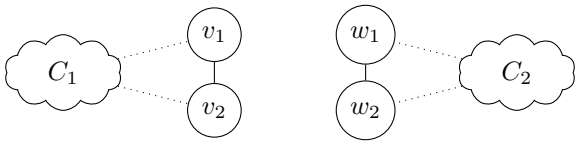
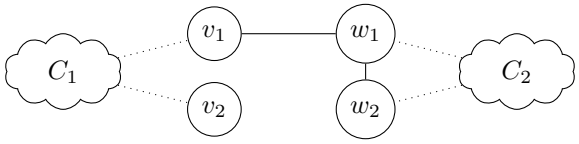
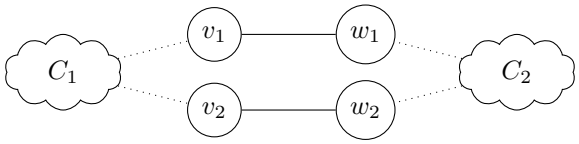
Problem 5



Step 1:



Step 2:



Result: The components are connected while $d(v_1), d(v_2), d(w_1), d(w_2)$ have not been modified.

Problem 6

Problem 7

For a set $C = \{G_1, ..., G_n\}$ of connected components:

$$\pi(C) = \sum_{i=1}^{n} \frac{|\{v \in V(G_i) \mid d(v) \text{ odd}\}|}{2} \tag{1}$$

Problem 8