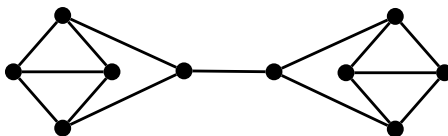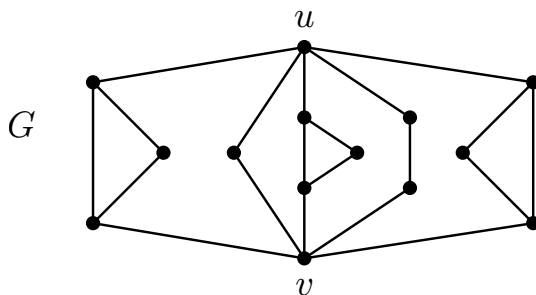**1.** Determine the edge chromatic number of the following graph:

2. a) Remove the vertices u and v from the graph G on the figure, and draw the obtained graph $G - \{u, v\}$.
  b) Determine the parameter $\nu(G)$.

3. A simple k-regular graph has $2n$ vertices. n arbitrary vertices of the graph are colored red, and the rest n vertices are colored blue. Is it possible that the number of edges connecting two red vertices is 2015, and the number of edges connecting two blue vertices is 2016?

4. How many spanning trees does the complete bipartite graph $K_{m,n}$ have?

5. There are 36 coins on a table: 5, 10, 20, 50, 100 and 200 forint coins, 6 coins of each kind. The coins are arranged ramdomly in a 6×6 ,,square". Prove that it is possible to pick one coin from each row such that the 6 picked coins are pairwise different.

Hint: You can apply the marriage theorem here.