1. For each of the following graphs fix a vertex \( v \). Find \( E = \{ w : d(v, w) \text{ is even} \} \) and \( O = \{ w : d(v, w) \text{ is odd} \} \). Show \( G \) is bipartite by checking that \( E \) and \( O \) are independent sets.

2. Find a maximum matching and the matching number \( \nu \) for each of the above graphs.

3. Find a minimum vertex cover and the covering number \( \beta \) for each of the above graphs.

4. Check that the mini-max version of König’s Theorem holds for each of the above graphs.