Let $G$ be the above graph. $M$ is the graphical matroid consisting of the forests of $G$. $E(M)$ is the edges of $G$. $I(M)$ is the forests of $G$ (the subsets of $E(M)$ which induce forests).

1. Explain why there are no 5-edge elements of $I(M)$.

2. Find all 4-edge elements of $I(M)$.

3. How many 3-edge elements are there of $I(M)$?

4. How many 2-edge elements are there of $I(M)$?

5. How many 1-edge elements are there of $I(M)$?

6. How many 0-edge elements are there of $I(M)$?
7. List all the edges of the bow tie graph (in any order you like). Now apply the greedy algorithm to find a maximum forest in this graph (the order you listed the edges is central to the algorithm).

8. Let $Y$ be any 5-edge subset of $E(M)$. Find $rank(Y)$.

9. Find a base of $M$.

10. Find $\mathcal{B}(M)$.