Exercise 1 *Find the grounded extension and all complete, stable and preferred extensions for given argumentation frameworks.*

1. $(\{A_1, A_2, A_3\}, \{(A_1, A_2), (A_2, A_3)\})$
2. $(\{A_1, A_2, A_3\}, \{(A_1, A_2), (A_2, A_3), (A_3, A_1)\})$
3. $(\{A, B, C, D\}, \{(A, B), (B, A), (A, C), (B, C), (C, D)\})$
4. $(\{A, B, C, D\}, \{(A, B), (B, C), (C, B), (C, D)\})$
5. $(\{A_1, A_2, A_3, A_4\}, \{(A_1, A_2), (A_2, A_3), (A_3, A_4), (A_4, A_1), (A_1, A_1), (A_3, A_3)\})$
6. $(\{A, B, C, D, E\}, \{(A, B), (B, C), (C, D), (D, C), (D, E)\})$
7. $(\{A, B, C, D\}, \{(A, A), (A, C), (B, C), (C, D)\})$
8. $(\{A, B, C, D, E\}, \{(A, B), (B, A), (B, C), (C, D), (D, E), (E, C)\})$

Exercise 2 *Given an arbitrary argumentation framework AF, prove following inclusions:*

$$\text{ADMISSIBLE}(AF) \supseteq \text{COMPLETE}(AF) \supseteq \text{PREFERRED}(AF) \supseteq \text{STABLE}(AF)$$

Find examples for strict inclusions.

Exercise 3 *For all argumentation frameworks in Exercise 1, apply appropriate labellings to compute all*

- *complete extensions*
- *stable extensions*

Exercise 4 *For each argumentation framework $(\mathcal{A}, \mathcal{R})$ in Exercise 1 and for each argument $A \in \mathcal{A}$, using dialogue game decide whether $A \in \text{Grounded}(AF)$.*