1. (4 marks) Consider Notes 1, Example 4. Give a model in which the following categorical proposition holds.

   All below four are even

2. (Exercise 1; 3 marks) Is the proposition

   All humans are humans

   valid? Use the semantics of categorical propositions in your argument.

3. (Exercise 2; 3 marks) Is the proposition

   Some humans are humans

   valid? Use the semantics of categorical propositions in your argument.

4. (Exercise 3; 10 marks) Use Venn diagrams and the definitions in Section 4 to argue why Axioms 4 and 5 are valid.

5. (Exercise 4; 10 marks) Use contraposition to prove

   All (non animals) are (non cats)

   using All cats are animals as axiom. Give your proof in graphical and text-based notation.

6. (Exercise 9; 10 marks) From the following premises

   - All babies are illogical.
   - Nobody is despised who can manage a crocodile.
   - Illogical persons are despised.

   prove that no babies can manage a crocodile. Write the proof in text-based notation.

7. (Exercise 15; 3 marks) How many Figure 1 syllogisms (valid or not) exist?