

Department of Mathematics and Statistics

Introduction to Discrete Mathematics

October 21, 2008

Write your name and your social security or student number on each paper.

1. Do all sets A , B and C satisfy the equation

$$(A \setminus (B \cap C)) \cap (B \setminus (A \cap C)) \cap (C \setminus (A \cap B)) = \emptyset ?$$

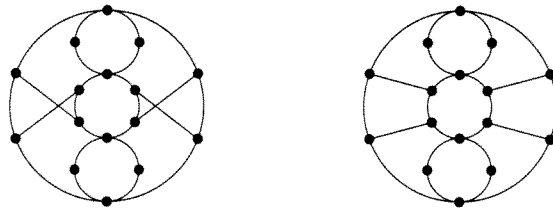
Justify your answer!

2. Let f be a mapping $X \rightarrow Y$, and let $A \subseteq X$ and $B \subseteq Y$. Show that

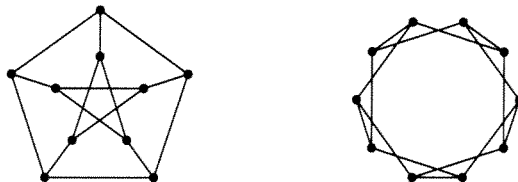
$$A \subseteq f^{-1}(f(A)) \quad \text{and} \quad f(f^{-1}(B)) \subseteq B .$$

3. How many different “words” can you obtain from the word KÄÄNTEENTEKEVÄ by rearranging its letters , when it is required that the word obtained does not have two adjacent letters Ä?
4. Explain, why the two given graphs, given in (a) and (b) below, are not mutually isomorphic.

(a)



(b)



5. How many edges does the graph shown on the right have?
The mere answer does not suffice. Show also the calculations!

