Name: _____

1. Knights & Knaves. Statements made by knights are true. Statements made by knaves are false. You meet three people, Xavier, Yolanda and Zain, and you know that each is either a knight or a knave. This is what they said:

> Xavier says, "Zain is not a knave."
>
> Yolanda tells you, "Zain is a knight or Xavier is a knave."
>
> Zain says, "I am a knight and Xavier is a knave."

    a. Which of these three people are knights? which are knaves?

    b. Is your solution the only possible solution? Show your reasoning.

2. Proof by Contradiction. Let A, B and C be sets. Prove the following set equality using a proof by contradiction (i.e., suppose that the set on the left is *not* the empty set).

$$((A - C) - B) \cap (B \cap C) = \emptyset$$

Note: You are required to use proof by contradiction.