Problem 1. Consider the sentence "Let $x = 6$. Then $y = 7$ is greater than 6." Which of the following facts does this sentence demonstrate?

A) It proves "For any integer x there is an integer y with $y > x$."

B) It disproves "There is no integer x such that there is an integer y with $y > x$."

C) Both

D) Neither

Solution. A)   □

Problem 2. The only way to disprove a statement "X implies Y" is to show that there is some situation in which X is true and Y is false.
   A) True   B) False

Solution. A)   □

Problem 3. Let's agree to call a number *threeven* if it is divisible by 3. How would you disprove the statement "Every number is even or threeven."

A) Find a number that is neither even nor threeven

B) Find a number that is both even and threeven

C) Find one number that is not even and one number that is not threeven

Solution. A)   □

Problem 4. Let's say that a number is *fourven* if it is divisible by 4. Which of the following sentences is true?

A) A number that is even is also fourven.

B) A number that is fourven is also even.

C) Both.

D) Neither.

Solution. B)   □