

Math 156: Logical Reasoning In-class Exercises

1. Are the following pairs of statements negations of each other?
 - (a) Pat drinks coffee.
Pat does not drink coffee.
 - (b) Pat drinks coffee.
Pat drinks tea.
 - (c) The number of students in this class is even.
The number of students in this class is odd.
 - (d) The balance in my Visa account is a positive number.
The balance in my Visa account is a negative number.
 - (e) There are fewer than twenty students in this class.
There are at least twenty students in this class.
 - (f) Everyone at the bar right now wants a beer.
No-one at the bar wants a beer.

2. Which “or”, inclusive or exclusive, is meant in the following sentences?
 - (a) Wanted: Dead or Alive!
 - (b) Would you like milk or sugar in your tea?
 - (c) I want to get an A or a B for my final mark in Pat’s math class.

3. Let $p =$ “Pat drank tea” and $q =$ “Pat drank coffee”. Translate the following into logical symbols.
 - (a) Pat drank tea or coffee.

- (b) Pat drank tea or she didn't.
- (c) Pat drank tea and not coffee.
- (d) Pat drank tea but not coffee.
- (e) It's not true that Pat drank both tea and coffee.

4. Answer the questions, based on the given information, with Y (yes), N (no), or M (maybe).

- (a) True: I drank tea and coffee today.
Question: Did I drink tea today?

- (b) True: I drank tea today.
Question: Did I drink tea or coffee today?

Question: Did I drink tea and coffee today?

- (c) True: I drank tea or coffee today.
True: I did not drink coffee today.
Question: Did I drink tea today?

- (d) True: I drank tea or coffee today.
True: I drank coffee today.
Question: Did I drink tea?

- (e) True: I drank tea or coffee today but not both.
True: I drank coffee today.
Question: Did I drink tea today?