

Name: _____

PanthID: _____

Quiz 1 - A MAD 2104

Summer A 2015

1. (6 pts) Suppose j , c and e are, respectively, the propositions:

j : “you get the job”

c : “you know C”

e : “you know Excel”.

Using j , c , e and logical connectors, express each of the following compound propositions:

(a) “You know C and you know Excel but you did not get the job.”

(b) “You get the job only if you know C or Excel”

2. (6 pts) Are the expressions

$$(p \vee q) \rightarrow r \text{ and } (p \rightarrow r) \wedge (q \rightarrow r)$$

logically equivalent? Justify your answer.

3. (9 pts) Write the negation of each of the following statements. You may use logical symbols to help you, but your final answer should be an English sentence. However, it is not acceptable to simply say – “It is not true that ... ” .

(a) John plays violin but John does not play piano.

(b) If it is rainy then I don't go to work.

(c) Everybody loves somebody.

4. (6 pts) Suppose there are signs on the doors to two rooms. The sign on the first door reads: “In this room there is a lady and in the other room there is a tiger.” The sign on the second door reads: “In one of these rooms, there is a lady and in the other a tiger.” Suppose that you know that one of these signs is true and the other is false. Behind which door is the lady? Briefly describe your reasoning.

Name: _____

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Quiz 1 - B

MAD 2104

Summer A 2015

1. (6 pts) Suppose j , c and e are, respectively, the propositions:

j : “you get the job”

c : “you know C”

e : “you know Excel”.

Using j , c , e and logical connectors, express each of the following compound propositions:

(a) “You get the job if you know C or you know Excel.”

(b) “It is necessary that you know both Excel and C to get the job.”

2. (6 pts) Are the expressions

$$(p \wedge q) \rightarrow r \text{ and } (p \rightarrow r) \vee (q \rightarrow r)$$

logically equivalent? Justify your answer.

3. (9 pts) Write the negation of each of the following statements. You may use logical symbols to help you, but your final answer should be an English sentence. However, it is not acceptable to simply say – “It is not true that ... ” .

(a) If there is a tropical storm then the university is closed.

(b) I will have a cookie or an ice-cream cone, but not both.

(c) Everybody loves somebody.

4. (6 pts) Suppose there are signs on the doors to two rooms. The sign on the first door reads: “In this room there is a lady and in the other room there is a tiger.” The sign on the second door reads: “In one of these rooms, there is a lady and in the other a tiger.” Suppose that you know that one of these signs is true and the other is false. Behind which door is the lady? Briefly describe your reasoning.