Math 5710 Monday, 7/14/20 Quiz 16

1. What is your name?

2. Determine whether or not the following proposition is true; indicate your determination by circling either "T" or "F" and then prove your determination is correct:

$\forall\, \Omega,\ \exists\, A, B \in \{\text{ events of } \Omega\ \} \ni A$ and $B$ are mutually exclusive

T F

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Sample proof attempt:

By definition 029E, $C \in \{\text{ events of } \Omega\ \} \Leftrightarrow C \subseteq \Omega$ . And we proved the following theorem while engaged in homework for Meeting #2: $S \in \{\text{ sets }\} \Rightarrow \varnothing \subseteq S$. Therefore, $\varnothing \subseteq \Omega$,.

Now remind ourselves of the definition of *mutually exclusive*:

037D. Given $A \subseteq \Omega \wedge B \subseteq \Omega$ , ( $A$ and $B$ are mutually-exclusive relative to one another $\Leftrightarrow$ $p(\, A \cap B\,) = 0$ )

So choose $\varnothing$ for $A$ and we have $A \cap B = \varnothing \Rightarrow p(\, A \cap B\,) = 0$

*Q.E.D.* (I think!)

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3. Smile.