Homework 1

Your Name

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Section 2.1

Let $m : \mathcal{A} \to [0, \infty)$ be a set function where $\mathcal{A}$ is a σ-algebra. Assume m is countably additive over countable disjoint collections of sets in $\mathcal{A}$.

Problem 1

Given sets A, B, and C, if $A \subset B$ and $B \subset C$, then $A \subset C$.

Proof. Other symbols you can use for set notation are

- $A \supset B \supseteq C \subset D \subseteq E$. Also $\varnothing$vs$\emptyset$
- $\cup$ and $\cup_{k=1}^{\infty} E_k$
- $\cap$ and $\cap_{x \in \mathbb{N}} \{\frac{1}{\sqrt[3]{x}}\}$
- $\bigcup$ and $\bigcap\limits_{k=0}^{n}$ and $\bigcap$
- most Greek letters $\sigma\pi\theta\lambda_i e^{i\pi}$
- $\int_0^2 ln(2)x^2 sin(x)dx$
- $\leq<\geq>=\neq$

If you want centered math on its own line, you can use a slash and square bracket.

$$\left\{\sum_{k=1}^{\infty} l(I_k) : A \subseteq \bigcup_{k=1}^{\infty} \{I_k\}\right\}$$

The left and right commands make the brackets get as big as we need them to be. ☐

Problem 2

Given...

Proof. Let $\epsilon > 0$. If you have a shorter statement that you still want centered, use two $$ on either side.

$$\exists \text{ some } \delta > 0 \mid ...$$

$\square$

Problem 3

Proof. $\square$

Section 2.2

Problem 6

Blah

Problem 7

Blah

Problem 10

Blah