Name: Key

Note: There are many possible answers

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Show all work clearly and in order. Please box your answers. 10 minutes.

1. Show: There exist sets A and B such that $|A \setminus B| \neq |A| - |B|$.

Consider : A = {1,2}

B = { 2,3}

Observe: |A\B| = 1

|A|-|B| = 2-2 = 0

2. Show: There exist sets A and B such that $A \cup B = A \cap B$.

Consider: A = \$

B = \$

observe : $AUB = \phi U \phi = \phi$

AnB = $\phi \cap \phi = \phi$

3. Let A and B be abritrary sets in some universe $\mathcal U$

(a) Show: $A \cap B \subseteq A$.

Let XEANB.

so xEA and XEB.

In particular XEA.

Therefore ANBSA.

(b) Show: $A \subseteq A \cup B$.

Let x E A.

So xEA or XEB

Therefore XEAUB.

Hnre ACAUB.