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Now You Try

The sum of two even numbers is even.

Make sure you know:

1. What every word in the statement means.

2. What the statement as a whole means.

3. Where to start.

4. What your target is.

Even

An integer x is even if (and only if) there exists an integer z, such that $x = 2z$.

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Help me adjust my explanation!

1. Write the statement in predicate logic.
2. Write an English proof.
3. If you have lots of extra time, try writing the symbolic proof instead.

Try it!

Let $A = \{1,2,3,4,5\}$

$B = \{1,2,5\}$

Is $A \subseteq A$?

Is $B \subseteq A$?

Is $A \subseteq B$?

Is $\{1\} \in A$?

Is $1 \in A$?

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A proof!

What's the analogue of DeMorgan's Laws...

$$\bar{A} \cap \bar{B} = \overline{A \cup B}$$

$$A = B \equiv \forall x (x \in A \leftrightarrow x \in B) \equiv A \subseteq B \wedge B \subseteq A$$

$$\bar{A} \cap \bar{B} \subseteq \overline{A \cup B}$$

$$\overline{A \cup B} \subseteq \bar{A} \cap \bar{B}$$

Two claims, two proof techniques

Suppose I claim that for all sets A, B, C: $A \cap B \subseteq C$

That...doesn't look right.

How do you prove me wrong?