Problem 0.5

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1 Chapter 0 problem 5

If A is a subset of C and B is a subset of C prove that A union B is a subset of C.

Assume that x is an element in the union of A and B.

This means that x is either an element in A or an element in B.

Assume, without loss of generality, that x is an element in A and not B.

Since x is an element in A and A is a subset of C, this means that x is an element of C.

This can be applied to any element x in the union of A and B, so this shows that the union of A and B is a subset of C.