### the formTheorem: Exchanging the Sum Symbols in Double Sums of Products∑11≤≤ij≤≤mn aibj = i = 1∑m j = 1∑n aibj

If the associative and commutative laws apply to the summands, then the sum symbols of the double sums may be swapped, i.e.,Proof: ∑11≤≤ij≤≤mn aibj = i = 1∑m j = 1∑n aibj = j = 1∑n i = 1∑m aibj = ∑11≤≤ij≤≤mn aibj

In consideration of the previous statement , it applies with i = 1∑m j = 1∑n aibj = i = 1∑m j = 1∑n cij = j = 1∑n i = 1∑m cij c=ij ≔ aj = 1∑n ibi = 1∑mjthat:aibj

#### STUDY GOALS

On completion of this unit, you will have learned...

what is meant by a set, subset, and superset.

how to form the union, intersection, and difference of sets.

which calculation rules apply for unions, intersections, and differences.

what is meant by the cardinality of a set.

how the power set of a set is formed.

what it means when one number splits another number.

how equivalence relations and equivalence classes are defined and what properties they have.