

Assignment-5

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Question

papoulis book exercise 2

Q-7 If $S = \{1,2,3,4\}$, find the smallest field that contains the sets $\{1\}$ and $\{2,3\}$.

Solution

I understand that with the field, I want to find the unions, intersections, complements, and then the empty set and S .

Union is $\{1,2,3\}$.

Intersection is $\{\}$.

complement is $\{4\}$.

empty set is $\{\}$.

Sample space is $\{1,2,3,4\}$.

The smallest required field: $F = \{\{\}, \{1\}, \{4\}, \{1,4\}, \{2,3\}, \{1,2,3\}, \{2,3,4\}, \{1,2,3,4\}\}$.