

2. DeMorgan's Laws are stated below.

DeMorgan's Laws. Consider a sample space \mathcal{S} , and any Borel field \mathcal{B} of \mathcal{S} . Then for any two events A and B in \mathcal{B} ,

$$(A \cup B)^c = A^c \cap B^c$$

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- (a) Draw clearly labeled Venn diagrams to illustrate both parts of DeMorgan's Laws, one diagram for each law. Do not put both laws on the same diagram.
- (b) Prove DeMorgan's laws. Note: The Venn diagram is not a proof. It is a tool to help you visualize how you would prove the results