DATA 468 Homework 5

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**Instructions**: Please write or type your solutions clearly and show all relevant steps. Once you are done, please upload your solutions to Gradescope. Ifyou need to scan your solutions, please use a free scanning app like CamScanner instead of sendingphotographs. Please submit your solutions within the prescribed time, as late submissions will be notconsidered.

1. A probability space is defined as a triple (*Ω, F, P*). Given the following:

* The sample spaceΩ={H,T} , where H represents heads and T represents tails.
* The σ-algebra is ***F***={∅， {H}，{T}，{H，T}}, a collection of subsets ofΩ.
* P is a probability measure such that and P{H}=p， P{T}=1-p.

(a) Show that***F*** satisfies the properties of σ-algebra.

(b) Verify that*P* satisfies the axioms of a probability measure.

(c) If p=0.5, compute*P*({H,T}) and *P*(∅).

Note: ∅(empty set)