

Homework 1 - problems not in the book

Problem 1

Let the sample space S be the unit cube, i.e. $0 < x < 1$, $0 < y < 1$ and $0 < z < 1$. For $A \subset S$ we define $P(A) = \text{Volume}(A)$

- (a). Show that P is a probability function
- (b). Find the probability of $A = \{(x, y, z) : 0 < x < y < 1 \text{ and } z \leq y \exp(-x)\}$. Hint: You find the volume of A by integrating $y \exp(-x)$ over the right values of x and y .