CSCD84: Artificial Intelligence

Worksheet: Probability Review

Q1

Suppose the variables A and Bare Boolean variables (*i.e.*, A can have the value a or $\neg a$) and A is independent of B. Determine the missing values in the joint distribution for $P(A, B)$ below.

$P(\neg a, \neg b)$	0.1
$P(\neg a, b)$	0.3
$P(a, \neg b)$	
$P(a, b)$	

Q2

Suppose A, B and C are Boolean variables and that B is independent of C given A. Determine the missing values in the joint distribution for $P(A, B, C)$ below.

$P(\neg a, \neg b, \neg c)$	0.01
$P(\neg a, \neg b, c)$	0.02
$P(\neg a, b, \neg c)$	0.03
$P(\neg a, b, c)$	
$P(a, \neg b, \neg c)$	0.01
$P(a, \neg b, c)$	0.1
$P(a, b, \neg c)$	
$P(a, b, c)$	

Q3

Given that $P(A \mid B) < P(A)$. Show that $P(B \mid A) < P(B)$.