AI1103 : Assignment 1

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Download all python codes from

https://github.com/SavaranaDatta/AI1103/tree/main/Assignment1/codes

and latex codes from

https://github.com/SavaranaDatta/AI1103/blob/main/Assignment1/Assignment1.tex

PROBLEM(6.8)

If **A** and **B** are two events such that P(A)≠ 0. Find $P(B/A)$, if

1) **A** is a subset of **B**
2) **A** ∩ **B** = ϕ

SOLUTION(6.8)

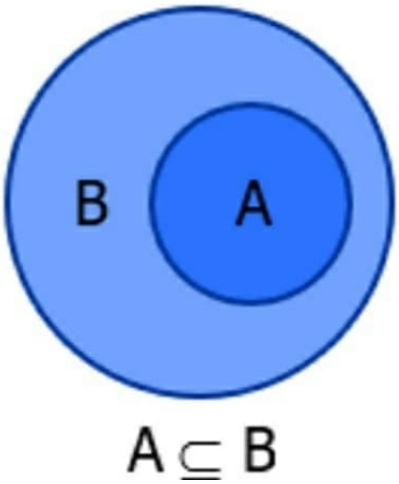
By definition,

$$P(B/A) = \frac{P(AB)}{P(A)} \tag{6.8.1}$$

1) Given event **A** is a subset of an event **B**, so

$$AB = A \tag{6.8.2}$$

$$\implies P(AB) = P(A) \tag{6.8.3}$$



Substituting equation 6.8.3 in equation 6.8.1 we get,

$$P(B/A) = 1 \tag{6.8.4}$$

2) Given **A**∩**B** is ϕ . Which states that

$$P(AB) = 0 \tag{6.8.5}$$

From equation 6.8.1 we have

$$P(B/A) = \frac{P(AB)}{P(A)}$$

As P(AB)=0 from equation 6.8.5. We have

$$P(B/A) = \frac{0}{P(A)} \tag{6.8.6}$$

As it is mentioned that P(A)≠ 0

$$P(B/A) = 0 \tag{6.8.7}$$