Probability Assignment 2

EE22BTECH11217 - Sayan Biswas

1 Problem statement

A and B are events such that:

- $\Pr(A) = 0.42$
- $\Pr(B) = 0.48$
- $\Pr(AB) = 0.16$.

Determine:

1) $\Pr(A')$
2) $\Pr(B')$
3) $\Pr(A + B)$

2 Answer

1) $\Pr(A')$: We know that,

$$A + A' = 1 \tag{1}$$

Hence,

$$\implies \Pr(A + A') = 1 \tag{2}$$
$$\implies \Pr(A) + \Pr(A') = 1 \tag{3}$$

$$\implies \Pr(A') = 1 - \Pr(A) \tag{4}$$
$$= 1 - 0.42 \tag{5}$$
$$= 0.58 \tag{6}$$

2) $\Pr(B')$: We know that,

$$B + B' = 1 \tag{7}$$

Hence,

$$\implies \Pr(B + B') = 1 \tag{8}$$
$$\implies \Pr(B) + \Pr(B') = 1 \tag{9}$$

$$\implies \Pr(B') = 1 - \Pr(B) \tag{10}$$
$$= 1 - 0.48 \tag{11}$$
$$= 0.52 \tag{12}$$

3) $\Pr(A + B)$: As we know,

$$\Pr(A + B) = \Pr(A) + \Pr(B) - \Pr(AB) \tag{13}$$
$$= 0.42 + 0.48 - 0.16 \tag{14}$$
$$= 0.74 \tag{15}$$