# ASSIGNMENT-3

MUKUNDA REDDY AI21BTECH11021

## Exercise 16.3

**17)** A and B are events such that $P(A) = 0.42$, $P(B) = 0.48$ and P(A and B) = 0.16. Determine
(i) P(not A)
(ii) P(not B)
(iii) P(A or B)

---

## Solution

### (i) Determine p(not A)

Given $P(A) = 0.42$ so we have

$$\begin{aligned} P(\overline{A}) &= 1 - P(A) \\ &= 1 - 0.42 \\ &= 0.58 \end{aligned}$$

$$\therefore P(notA) = 0.58 \qquad (1)$$

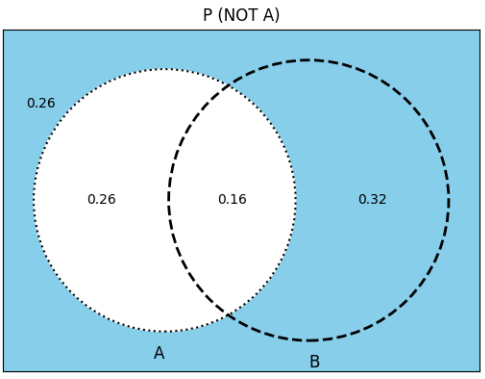


Figure 1: P($\overline{A}$)

### (ii) Determine p(not B)

Given $P(B) = 0.48$ so we have

$$\begin{aligned} P(\overline{B}) &= 1 - P(B) \\ &= 1 - 0.48 \\ &= 0.52 \end{aligned}$$

$$\therefore P(not\ B) = 0.52 \qquad (2)$$

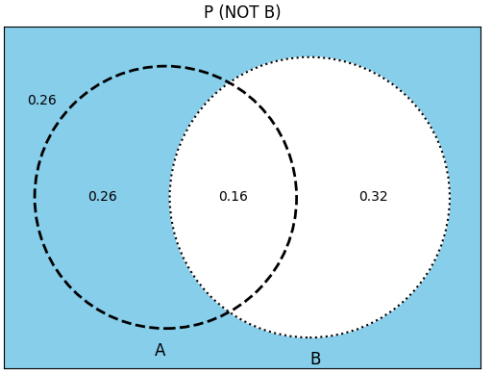


Figure 2: P($\overline{B}$)

### (iii) Determine p(A or B)

Given $P(A \cap B) = 0.16$,$P(A) = 0.42$
$P(B) = 0.48$ so we have

$$\begin{aligned} P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\ &= 0.42 + 0.48 - 0.16 \\ &= 0.74 \end{aligned}$$

$$\therefore P(A\ or\ B) = 0.74 \qquad (3)$$

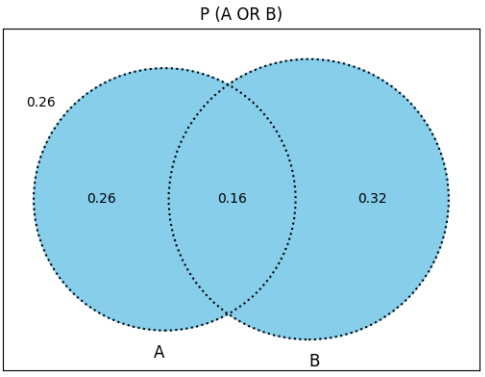


Figure 3: P(A $\cup$ $B$)

# Verification

```
Enter the value of P(A) =0.42
Enter the value of P(B) =0.48
Enter the value of p(A and B) =0.16
P(NOT A) = 0.58
P(NOT B) = 0.52
P(A OR B) = 0.74
```

Figure 4: python code