

Assignment # 04

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Section: BS(IS)-4A

A new computer virus can - - - -

- - - What is the probability that the virus does not enter the system at all?

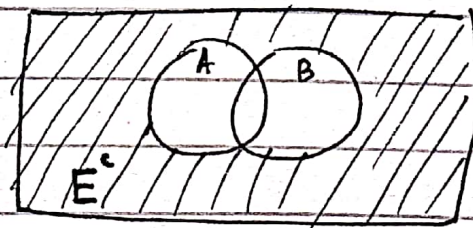
Solution:

Let A and B be events such that

A = virus enters through Internet

B = virus enters through email

$A \cap B$ = virus enters simultaneously through email and internet.



Let E be an event such that

$E = A \cup B$ = virus enters the computer

and

E^c = virus does not enter the computer.

Now

Given that

$$P(A) = 40\% = 0.4$$

$$P(B) = 30\% = 0.3$$

$$P(A \cap B) = 0.15$$

$$P(E) = P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(E^c) = ?$$

Now by Axioms of probability
we know that

$$P(E^c) = 1 - P(E)$$

putting values

$$P(E^c) = 1 - P(A \cup B)$$

$$\Rightarrow P(E^c) = 1 - \{P(A) + P(B) - P(A \cap B)\}$$

$$P(E^c) = 1 - \{0.4 + 0.3 - 0.15\}$$

$$P(E^c) = \boxed{0.45} \text{ ans.}$$