Assignment #06

Name: Sawera Yousaf
Roll No: 19P-0007
Section: BS(CS)-9A

solution:

Let A be an event such that

A = plants were watered

and B be another event such that
B = plants were not alive

Given that
Probabillity plant died without water is given by
$$P(B \mid A^c) = 0.8$$

where A^c = plants were not watered.
and probability plants died with water is given by
$$P(B/A) = 0.15$$

and probability that plants were watered
is given by

$$P(A) = 0.9$$

$P(B)$ is the probibility plant died
$P(B^c)$ is the probility plant were alive

Now we have to find $P(B^c) = ?$

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

$P(B) = P(B|A^c) \, P(A^c) + P(B|A) \, P(A)$

since $P(A^c) = 1 - P(A) = 1 - 0.9 = 0.1$

putting values

$P(B) = (0.8)(0.1) + (0.15)(0.9)$

$= 0.215$

Now

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

$= 1 - 0.215$

$= \boxed{0.785}$ ans

(b) Now

probibility that plants were dead
because neighbours forgot to water it.

$P(A^c | B) = \ ?$

$P(A^c | B) = \dfrac{P(B | A^c) \cdot P(A^c)}{P(B)}$

putting values

$P(A^c | B) = \dfrac{0.8 \times 0.1}{0.215} \quad = \dfrac{16}{43} \quad = 0.372$ ans.