Answer on Question #44716 – Math - Discrete Mathematics

In a survey of a TriDelt chapter with 50 members, 19 were taking mathematics, 33 were taking English, and 7 were taking both. How many were not taking either of these subjects?

Solution:

Let **A** will be a the set of participants who taking mathematics , **B** a the set of participants who taking English and respectively $\boldsymbol{\Omega}$ will be the set of all members. Then

$|\Omega| = 50$ total number of participants in a survey of a TriDelt and

$|\mathrm{A}| = 19$ number of participants who taking mathematics

$|\mathrm{B}| = 33$,- taking English

$|\mathrm{A} \cap \mathrm{B}| = 7$- taking both.

So using inclusion–exclusion principle we obtain that set of members in survey who did not taking any subjects is equal $\mathbf{\Omega - A - B + A \cap B.}$

Hence **50-19-33+7=5** number of participants who did not taking any subjects.

Answer:

5 of participants in a survey of a TriDelt who did not taking any subjects.

P. S.: In combinatorics, the **inclusion–exclusion principle** is a counting technique which generalizes the familiar method of obtaining the number of elements in the union of two finite sets;

symbolically expressed as

$$|A \cup B| = |A| + |B| - |A \cap B|,$$

where *A* and *B* are two finite sets and $|S|$ indicates the cardinality of a set *S* (which may be considered as the number of elements of the set, if the set is finite). The formula expresses the fact that the sum of the sizes of the two sets may be too large since some elements may be counted twice. The double-counted elements are those in the intersection of the two sets and the count is corrected by subtracting the size of the intersection.