Conditions

A problem in mathematics is given to three students A, B and C whose chances of solving it are 1/3, 1/4 and 1/5 respectively. find the probability that the problem will be solved

Solution

This is the probability of the event, which has the following elementary outcomes:

1) The A student solved the problem, B and C failed
2) The B student solved the problem, A and C failed
3) The C student solved the problem, B and A failed
4) The A and B students solved the problem, C failed
5) The A and C students solved the problem, B failed
6) The C and B students solved the problem, A failed
7) All three students have solved the problem

The easier way to solve this task is to find the probability of the opposite event – all 3 students have failed the task. It's the product of the opposite probabilities (can be found like "1 – probability of success")

$$\bar{P} = \frac{2}{3} \cdot \frac{3}{4} \cdot \frac{4}{5} = 0.4$$

Then the probability of the problem being solved is:

$$P = 1 - \bar{P} = 0.6$$

Answer: 0.6 (or in 60% cases of solving analogic problems)