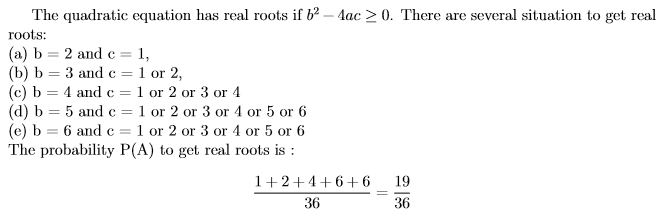
EE3060 Probability – Proposed questions and answers

Question 1:

The coefficients of the quadratic equation x2 + bx + c = 0 are determined by tossing a fair die twice (the first outcome is b, the second one is c). Find the probability that the equation has real roots.

Answer 1:



Question 2:

Rolling three fair dice today. What is the probability of rolling the smallest dice point is 2 given that the biggest dice point is 5?

Answer 2:

Subset A represents the numbers of event which the biggest point is five is equal to

The numbers of event which is correspondent to the requirement of the problem are

(5, 2, 2) = 3 events

(5, 2, 3) = 6 events

(5, 2, 4) = 6 events

(5, 2, 5) = 3 events

So, the answer goes to

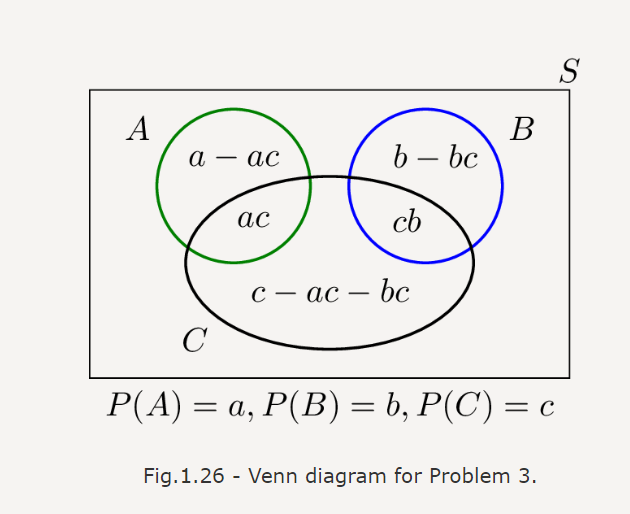
Question 3:

For three events A, B, and C, we know that A and C are independent,

B and C are independent , A and B are disjoint ,P(A∪C)=2/3,P(B∪C)=3/4,P(A∪B∪C)=11/12 Find P(A),P(B), and P(C).

Answer 3:

We can use the Venn diagram in Figure 1.26 to better visualize the events in this problem. We assume P(A)=a,P(B)=b, and P(C)=c. Note that the assumptions about independence and disjointness of sets are already included in the figure.



Now we can write

P(A∪C)=a+c−ac=2/3;

P(B∪C)=b+c−bc=3/4;

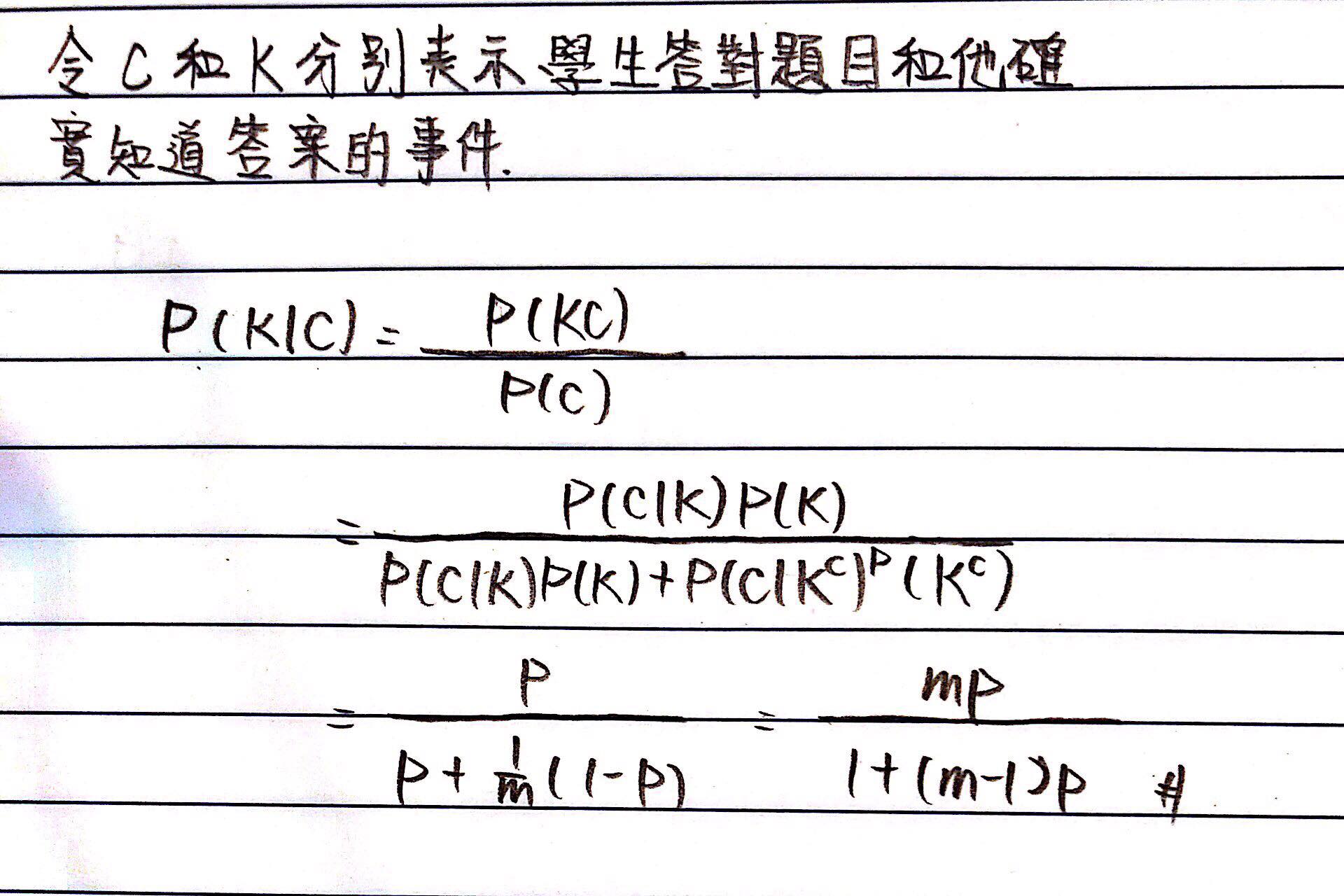
P(A∪B∪C)=a+b+c−ac−bc=11/12.

By subtracting the third equation from the sum of the first and second equations, we immediately obtain c=1/2, which then gives a=1/3 and b=1/2.

Question 4:

考多重選擇題時，學生可能知道答案，也可能用猜的。設學生知道答案的機率為p，猜答案機率為1-p。假設學生猜對答案的機率是1/m，其中m為選擇題的選項數。若學生答對某題，試求他知道答案的機率為多少?

Answer 4:



Question 5:

Two persons are playing a match in which they stop as soon as anyone of them wins n games. Suppose that the probability for each person to win any game is 1/2, independent of other games. What is the probability that the loser has won exactly k games when the match is over?

Answer 5: 