

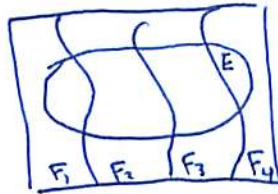
1. If A and B are independent, what is $P(A \cup B)$?

(1)

$$\begin{aligned} P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\ &= P(A) + P(B) - P(A)P(B) \end{aligned}$$

2. Illustrate the law of total probability with a picture.

(1)



3. About 10 years ago there was a big scandal that certain oral contraceptives doubled the chance of a venous thrombosis (VT) from 15 in 100,000 to 30 in 100,000. Many women stopped taking the pill and consequently became pregnant, which has a much higher risk of VT - 75 out of 100,000. Assume that 50% of women stopped taking the pill, and 85% of those women became pregnant. What's the probability of getting a VT for those women who were on the pill before the scandal?

(3)

