

1. 10 points This is question 10 on p. 112. Three cards are randomly selected, without replacement, from an ordinary deck of 52 playing cards. Compute the conditional probability that the first card selected is a spade, given that the second and third cards are spades.

ANSWERS

1.

$$A = \{\text{first card is a spade}\} \quad B = \{\text{second and third are spades}\}$$

Then

$$A \cap B = \{\text{all three cards are spades}\}$$

so

$$\mathbb{P}(A \cap B) = \frac{(13)_3}{(52)_3} \quad \mathbb{P}(B) = \frac{(13)_2}{(52)_2}$$

and thus

$$\mathbb{P}(A|B) = \frac{(13)_3 \times (52)_2}{(13)_2 \times (52)_3} = \frac{11}{50}.$$