

$$P(F = \text{True}) =$$

(الف) ①

$$P(F | S) \times P(S) = P(F, S)$$

	F true	False
S پاییز	0/2	0/3
بهار	0/05	0/15

$$\Rightarrow P(F = \text{True}) = P(F \text{ و } S \text{ پاییز}) + P(F \text{ و } S \text{ بهار}) = 0/2 + 0/05 = 0/25$$

$$P(F = \text{true} \text{ و } S = \text{پاییز}) = 0/2$$

(ب)

$$P(F = \text{true} | S = \text{پاییز}, H = \text{true}, P = \text{true}) =$$

(ج)

$$\frac{P(F \text{ و } S \text{ پاییز و } H \text{ و } P)}{P(S \text{ پاییز و } H \text{ و } P)} = \frac{0/2 \times 0/15 \times 0/19 \times 0/1}{0/15 \times (0/19 + 0/18) \times 0/1} = \frac{0/134}{1/17}$$

$$P(\text{PetalWidth} = "XS" | \text{Species} = "Iris-setosa") =$$

فرمول ②

$$\frac{P(\text{PetalWidth} = "XS" \text{ و } \text{Species} = "Iris-setosa")}{P(\text{Species} = "Iris-setosa")}$$

که کد:

$$\frac{\text{len}(df.loc[df.PetalWidth == "XS"][df.Species == "Iris-setosa"])}{\text{len}(df.loc[df.Species == "Iris-setosa"])} =$$

$$= \frac{34}{50}$$

$$P(\text{species} = \text{Iris-virginica} \mid \text{SepalLength} = L) = \textcircled{P}$$

$$\frac{P(\text{species} = \text{Iris-virginica}, \text{SepalLength} = L)}{P(\text{SepalLength} = L)}$$

$$P(\text{SepalLength} = L)$$

$$\frac{\text{len(df.loc[df.species == "Iris-virginica"][df.SepalLengthCm == "L"])}{\text{len(df.loc[df.SepalLengthCm == "L"])} = \checkmark$$

$$\text{len(df.loc[df.SepalLengthCm == "L"])} = 14$$

$$= \frac{10}{14}$$