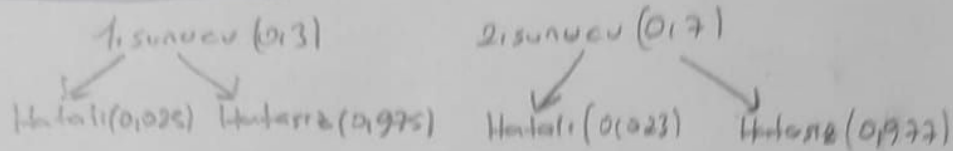


Olasılık ve İstatistik 3. devir
Mustafa Kunt B201210052 grubu: 1-B

2. sorunun çözümü



a) $0.3 \times 0.975 + 0.7 \times 0.977 = 0.9764$

b)
$$\frac{0.3 \times 0.025}{0.3 \times 0.025 + 0.7 \times 0.023} = \frac{0.0075}{0.0075 + 0.0161} = \frac{0.0075}{0.0236} = \frac{75}{236}$$

3. sorunun çözümü

Yılılık satış gelirleri = $\{50, 25, 10\}$

a)
$$\begin{array}{c|ccc} X & 10 & 25 & 50 \\ \hline P(X) & \frac{2}{10} & \frac{3}{10} & \frac{5}{10} \end{array}$$

b)
$$F(X) = \begin{cases} 0, & x < 10 \\ \frac{2}{10}, & 10 \leq x < 25 \\ \frac{5}{10}, & 25 \leq x < 50 \\ 1, & 50 \leq x \end{cases} \rightarrow P(X=25) + P(X=10) = \frac{5}{10}$$

c)
$$E[X] = \sum x_i \cdot P(X=x_i) = 10 \cdot \frac{2}{10} + 25 \cdot \frac{3}{10} + 50 \cdot \frac{5}{10} = 2 + 7.5 + 25 = 34.5$$

d)
$$\begin{array}{c|ccc} 2X+3 & 23 & 53 & 103 \\ \hline P_{2X+3} & \frac{2}{10} & \frac{3}{10} & \frac{5}{10} \end{array} \quad E = 23 \cdot \frac{2}{10} + 53 \cdot \frac{3}{10} + 103 \cdot \frac{5}{10} = 72$$

e)
$$\text{Var}[X] = E[X^2] - (E[X])^2$$

$$E[X^2] = 100 \cdot \frac{2}{10} + 625 \cdot \frac{3}{10} + 2500 \cdot \frac{5}{10} = 1457.5 - (34.5)^2 = 207.25$$

f)
$$E = 72 \quad 23^2 \cdot \frac{2}{10} + 53^2 \cdot \frac{3}{10} + 103^2 \cdot \frac{5}{10} = 6253 - (72)^2 = 1069$$