

Ex-3.1

$$\begin{aligned} \textcircled{0} \sum_{x \in \{0,1\}} p(x|\mu) &= p(x=0|\mu) + p(x=1|\mu) \\ &= (1-\mu) + \mu = 1 \end{aligned}$$

$$\textcircled{0} \sum_{x \in \{0,1\}} x p(x|\mu) = 0 \cdot p(x=0|\mu) + 1 \cdot p(x=1|\mu) = \mu$$

$$\begin{aligned} \textcircled{0} \sum_{x \in \{0,1\}} (x-\mu)^2 p(x|\mu) &= \mu^2 p(x=0|\mu) + (1-\mu)^2 p(x=1|\mu) \\ &= \mu^2(1-\mu) + (1-\mu)^2 \mu \\ &= \mu(1-\mu)(\mu + (1-\mu)) \\ &= \mu(1-\mu)(\mu + 1 - \mu) \\ &= \mu(1-\mu) \end{aligned}$$

