Ejercicio 5

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(a)
Calculamos la función de verosimilitud:

$$L(X_1, \cdots, X_n; \theta) = f(X_1, \cdots, X_n; \theta) = f(X_1; \theta) \cdots f(X_n; \theta) =$$

$$\theta(1-\theta)^{X_1-1} \cdots \theta(1-\theta)^{X_n-1} = \theta^n (1-\theta)^{X_1+\cdots X_n-n}$$

Calculamos θ^*:

$$LnL(X_1, \cdots, X_n; \theta) = nLn(\theta) + \bar{X} \Rightarrow \frac{d}{d\theta} LnL(X_1, \cdots, X_n; \theta) = 0$$

$$\frac{n}{\theta^*} - \frac{\bar{X}}{1-\theta^*} = 0 \Rightarrow n - n\theta^* - \bar{X}\theta^* = 0 \Rightarrow$$