Problem 1

(a)

$$f(\pi|x) = \prod_{i=1}^{n} \binom{k}{x_i} \pi^{x_i} (1-\pi)^{k-x_i}$$

$$= \left(\prod_{i=1}^{n} \binom{k}{x_i} \right) \pi^{\sum_{i=1}^{n} x_i} (1-\pi)^{\sum_{i=1}^{n} k - x_i}$$

(b)

(c)

(d)

(e)

(f)

Problem 2

(a)

(b)

(c)

(d)