

2) a)

$A=a$	$A=b$	
$y=0$ 1/4 0	1/4 0	$\Rightarrow K \perp A \quad P_A \{K=1\} = P_K \{K=1\}$
$y=1$ 0 1/4	0 1/4	$\max P(y=0 K=0) + P(y=1 K=1)$
$K=0 \mid K=1$	$K=0 \mid K=1$	

b)

$A=a$	$A=b$	3/6	1/6
$y=0$ 3/6 0	1/6 0	1/6	3/6
$y=1$ 0 1/6	2/6 1/6	$K \perp A \quad P_A \{K=1\} = P_K \{K=1\}$	
$K=0 \mid K=1$	$K=0 \mid K=1$	$P(y=0 K=0) + P(y=1 K=1)$	

c)

$A=a$	$A=b$	3/6	1/6
$y=0$ 3/6 0	1/6 0	1/6	3/6
$y=1$ 0 1/6	2/6 1/6	$\ominus \quad K \perp A \quad P_A(K=1 y=1) = P_K(K=1 y=1)$	
$K=0 \mid K=1$	$K=0 \mid K=1$	$\ominus \quad P_A(K=1 y=0) = P_K(K=1 y=0)$	

$\ominus \quad P(y=0|K=0) + P(y=1|K=1)$

3) $y \perp A \Rightarrow \nexists P(A, y, K) : K \perp A \wedge y \perp A | K$

$$K \perp A \Rightarrow P(K, A) = P(K) P(A)$$

$$y \perp A | K \Rightarrow P(y, A | K) = P(y | K) P(A | K)$$

$$= P(y | K) P(A, K)$$

$$= \frac{P(y, K)}{P(K)} \frac{P(A) P(K)}{P(K)}$$

$$= \frac{P(y, K)}{P(K)} P(A)$$

4) a) $f(x, z) = z \cdot (1-z) \cdot f(x, z) \rightarrow 1 \text{ prob } p$

$\rightarrow f(x, z) \text{ prob } (1-p)$

$$TP = P(K=1 | y=1)$$

$$FP = P(K=1 | y=0)$$

$$P(K=1 | y=1)$$

