Homework 6 Answers

BSTA 550

Questions

1. Partial answers:

- (g) $p_{X|Y}(X = \text{high school}|Y = \text{no smoking at all}) = 0.476$
- (h) $p_{Y|X}(Y = \text{no smoking at all}|X = \text{high school}) = 0.200$

2.
- (a) $p_{X,Y}(x, y) = [0.99^{x-1}0.01][0.97^{y-1}0.03]$ for $x, y = 0, 1, 2, ...$

$$F_{X,Y}(x,y) = \begin{cases} (1-0.99^x)(1-0.97^y) & \text{for } x \geq 1 \text{ \& } y \geq 1 \\ 0 & \text{if } x < 1 \text{ or } y < 1 \text{ or both} \end{cases}$$

- (b)

NOTE

$$\sum_{k=1}^{n} r^{k-1} = \frac{(1-r^n)}{1-r}$$

And hint:

$$P_{Y|X}(y|x) = P_Y(y) = 0.97^{y-1}(0.03) \quad \text{for } y = 1, 2, 3, \ldots$$

- (c)

3.
- (a) $f_{X|Y}(x|y) = \frac{1}{2}$ for (need x and y domains)
- (c) $\frac{4}{7}$