MATH 321: In-Class 15

1. Let $f(x, y) = \dfrac{xy + y}{27}$ for $x = 1, 2, 3$ and $y = 1, 2$ be the joint pmf for the random vector (X, Y).

   (a) Find the marginal pmfs $f_X(x)$ and $f_Y(y)$ (keep in functional form).

   (b) Find the conditional pmfs $f(x \mid Y = 1)$ and $f(y \mid X = 2)$.

   (c) Find $E(X \mid Y = 1)$ and $E(Y^2 \mid X = 2)$.

2. Let $f(x, y) = x + (3/2)y^2$ for $0 \le x \le 1$ and $0 \le y \le 1$.

   (a) Find the conditional pdf $f(y \mid x)$.

(b) Find $P(Y < 0.5 \mid X = 0.5)$.

(c) Find $E(Y \mid X = 0.5)$.

(d) Find $V(Y \mid X = 0.5)$.