Errata and updates for ASM Exam P Manual (Fifth Edition) sorted by page

[11/10/2023] On page 156, replace the solution to Example 15B with

Solution: Let's calculate the marginal distribution $P_X(1)$.

$$P_X(1) = f(1,0) + f(1,1) + f(1,2) = \frac{1^2+0}{24} + \frac{1^2+1}{24} + \frac{1^2+2}{24} = \frac{6}{24} = \frac{1}{4}$$

The conditional distribution of $Y \mid X = 1$ is

$$P_Y(0) = \frac{1/24}{1/4} = \frac{1}{6}$$
$$P_Y(1) = \frac{2/24}{1/4} = \frac{2}{6}$$
$$P_Y(2) = \frac{3/24}{1/4} = \frac{3}{6}$$

The first and second moments of the conditional distribution are

$$\mathbf{E}[Y \mid X = 1] = \frac{1}{6}(0) + \frac{2}{6}(1) + \frac{3}{6}(2) = \frac{8}{6} = \frac{4}{3}$$
$$\mathbf{E}[Y^2 \mid X = 1] = \frac{1}{6}(0^2) + \frac{2}{6}(1^2) + \frac{3}{6}(2^2) = \frac{14}{6} = \frac{7}{3}$$

The variance of the conditional distribution is

$$\operatorname{Var}(Y \mid X = 1) = \frac{7}{3} - \left(\frac{4}{3}\right)^2 = \boxed{\mathbf{\frac{5}{9}}}$$

[11/10/2023] On pages 158–159, exercises 15.10–15.11 are based on joint continuous variables, which is not on the current Exam P syllabus. They should be moved to Lesson 31.

[11/19/2024] On pages 476–477, replace the solution to question 4 with

The denominator of the conditional moment is $\Pr(X + Y > 3)$. Let's compute that. In order for $X + Y$ to be greater than 3, (X, Y) must equal (2,2), (3,1), or (3,2), with probabilities

$$\Pr\big((X,Y) = (2,2)\big) = \binom{3}{2}(0.4^2)(0.6)\binom{2}{2}(0.3^2) = (0.288)(0.09) = 0.02592$$
$$\Pr\big((X,Y) = (3,1)\big) = \binom{3}{3}(0.4^3)\binom{2}{1}(0.3)(0.7) = (0.064)(0.42) = 0.02688$$
$$\Pr\big((X,Y) = (3,2)\big) = \binom{3}{3}(0.4^3)\binom{2}{2}(0.3^2) = (0.064)(0.09) = 0.00576$$

The denominator is $0.02592 + 0.02688 + 0.00576 = 0.05856$. The numerator sums the product of the three probabilities times the value of X in the two events:

$$2(0.02592) + 3(0.02688 + 0.00576) = 0.14976$$

The conditional expected value of X is $0.14976/0.05856 = \boxed{\mathbf{2.557377}}$.

[11/19/2024] On page 477, in the solution to question 6, on the fifth line, change $\mathbf{E}[(X - 200)]$ to $\mathbf{E}[(X - 200)_+]$.