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

[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 $\mathbf{E}[(X-200)_+]$.

[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

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

[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.