Errata and updates for ASM Exam C/Exam 4 Manual (Eighteenth Edition) sorted by date.

[6/13/2018] On page 1449, in the solution to question 6, on the fifth line of the page, change $F(x_i)$ to $S(x_i)$.

[5/23/2018] On page 839, in the solution to Quiz 41-1, on the second line, change "Exposure units" to "Policyholder years".

[5/22/2018] On page 689, add the following after the table: "The data are fitted to a binomial distribution."

[4/26/2018] On page 1476, in the solution to question 16, on the first line, change "30$^{\text{th}}$" to "20$^{\text{th}}$".

[3/15/2018] On page 689, on the first line, delete one of the two "than"s.

[2/6/2018] On page 487, replace the solution to exercise 27.32 with

Let X be the kernel-smoothed distribution. For our 20-component mixture,

$$\begin{aligned}\mathbf{E}[X^2] &= \frac{1}{20}\sum_{i=1}^{20}\mathbf{E}[X_i^2] \\ &= \frac{1}{20}\sum_{i=1}^{20}\alpha(\alpha+1)\theta^2\end{aligned}$$

θ is selected as X_i/α.

$$\begin{aligned}\mathbf{E}[X^2] &= \frac{1}{20}\frac{\alpha(\alpha+1)}{\alpha^2}\sum_{i=1}^{20}X_i^2 \\ &= \frac{6}{100}(42{,}204) = \boxed{\textbf{2,532.24}}\end{aligned}$$

[1/22/2018] On page 25, in the solution to exercise 1.20, on the second line, change $\mathbf{E}[X^4]$ to $\mathbf{E}[(X-\mu)^4]$.

[1/9/2018] On page 794, in the table for exercises 39.6 and 39.7, change the exponential negative likelihood 425.3 to 423.3.

[11/6/2017] On page 1601, in the solution to question 29, on the sixth line, change (α) on the left side of the equation to $l(\alpha)$.

[11/6/2017] On page 1601, in the solution to question 30, on the last line of the page, delete the first 1 on the right side of the equation.

[10/29/2017] On page 1457, in the solution to question 30, on the third line, add a right parenthesis "after $x = 3$".

[10/29/2017] On page 1462, on the fourth line, change "fourth power" to "fourth root".

[10/15/2017] On page 1442, in the solution to question 24, on the last line of the page, delete the 0 after the equals sign.

[9/6/2017] On page 1463, in the solution to question 15, on the first line, change "age-0" to "age-30".

[7/24/2017] On page 315, in exercise 18.22, on the second-to-last line of the question, replace "expected claim amounts" with "expected aggregate claim amounts".

[7/7/2017] On page 904, two lines below the fifth displayed line, change $\mathbf{E}[X_{n_1} \mid \theta]$ to $\mathbf{E}[X_{n+1} \mid \theta]$.

[6/23/2017] On page 1601, in the solution to question 22, on the first displayed line, add a sum sign after the big bracket: $\sum m_i(x_i - \bar{x})^2$.

[6/19/2017] On page 477, in exercise 27.23(A), on the second line, change "as high than" to "as high as".

[6/18/2017] On page 792, one line below equation (39.1), change "likelihood" to "loglikelihood".

[6/18/2017] On page 799, in the solution to exercise 39.7, change the AIC calculation for Exponential to "425.3 + 1 = 426.3".

[6/12/2017] On page 720, in the solution to exercise 36.1, on the first line, change "to heavy" to "too heavy".

[6/2/2017] On page 1236, in the solution to exercise 62.16, on the first line, add "be" between "not" and "a".

[5/25/2017] On page 143, on the second and third lines of the answer to Example 8G, change 1.174 to 1.1774.

[5/18/2017] On page 507, in exercise 28.25, the question in the SOA sample is now question 74 instead of 73A.

[5/16/2017] On page 1065, on the fourth line of the fourth paragraph, delete the words "observations a weight of 3/12."

[5/8/2017] On page 751, on the fourth line, change "mean squared" to "mean" (delete the word "squared").

[1/13/2017] On page 1114, in exercise 56.15, on the last line of the table, delete "Claims".

[1/5/2017] On page 149, in the heading of Table 82., change Meaaures to Measures.

[12/14/2016] On page 759, on the third line of Section 38.5, replace "Section 38.5" with "Section 35.5".

[12/8/2016] On page 63, on the second line of the answer to Example 4E, replace $1\mathrm{d}x$ with $1\,\mathrm{d}t$.

[11/24/2016] On pages 681–682, replace the solution to exercise 34.32 beginning with the third paragraph with the following:

If you aren't comfortable calculating the Erlang distribution function, an alternative method for calculating $\Pr(Z > 20)$, is to calculate it directly. Once again, $Z = X_1 + X_2$, where X_1 and X_2 are the two exponential observations. We want $\Pr(Z > 20)$. By the Law of Total Probability, conditioning on X_1,

$$\Pr(Z > 20) = \int_0^\infty \Pr(Z > 20 \mid X_1 = x_1) f_{X_1}(x_1) \mathrm{d}x_1 \qquad (*)$$

The integral's lower bound is 0 since Z cannot be less than 0. X_1 is exponential with mean 6, so

$$f_{X_1}(x_1) = \frac{e^{-x_1/6}}{6} \qquad x_1 \geq 0$$

$\Pr(Z > 20 \mid X_1 = x_1)$ is equal to 1 if $X_1 \geq 20$, since $X_2 \geq 0$ and $Z = X_1 + X_2$. If $X_1 < 20$, then $Z > 20$ only if $X_2 \geq 20 - X_1$. Since X_2 is exponential with mean 6,

$$\Pr(X_2 \geq 20 - x_1) = e^{-(20-x_1)/6}$$

We can now rewrite equation (*) as follows:

$$\begin{aligned}\Pr(Z > 20) &= \int_0^{20} \Pr(Z > 20 \mid X_1 = x_1) f_{X_1}(x_1) \mathrm{d}x_1 + \int_{20}^\infty \Pr(Z > 20 \mid X_1 = x_1) f_{X_1}(x_1) \mathrm{d}x_1 \\ &= \int_0^{20} e^{-(20-x_1)/6} \left(\frac{e^{-x_1/6}}{6}\right) \mathrm{d}x_1 + \int_{20}^\infty \frac{e^{-x_1/6}}{6}\,\mathrm{d}x_1\end{aligned}$$

Let's evaluate these two integrals.

$$\begin{aligned}\Pr(Z > 20) &= \int_0^{20} \frac{e^{-20/6}}{6}\,\mathrm{d}x_1 + e^{-20/6} \\ &= \frac{20}{6}e^{-20/6} + e^{-20/6} \\ &= \left(1 + \frac{20}{6}\right)e^{-20/6} \\ &= \frac{13}{3}e^{-10/3} = \boxed{\mathbf{0.154587}}\end{aligned}$$

[11/21/2016] On page 484, in the solution to exercise 27.17, on the second line, replace theta in the exponent with θ.

[11/21/2016] On page 484, in the solution to exercise 27.18, replace the third, fourth, and fifth lines with

$$\begin{aligned}1 - 0.5(y^2 + y) &= 0.5 \\ y^2 + y &= 1 \\ y^2 + y - 1 &= 0\end{aligned}$$

[11/15/2016] On page 1432, in the solution to question 30, replace $\mathbf{E}[(X - 10{,}000)_+] - \mathbf{E}[(X - 500)_+]$ with $\mathbf{E}[(X - 500)_+] - \mathbf{E}[(X - 10{,}000)_+]$.

[11/13/2016] On page 445, in the solution to exercise 26.3, on the last line, change $\sqrt{0.1699}$ to $\sqrt{0.001699}$.