

Errata and Updates for ASM Exam S (Second Edition) Sorted by Date

Note the correction to practice exam 4 question 37 (page 790).

- [5/9/2017] On page 493, on the second line of the answer to Example 41D part 1, change $\Phi(1.15)$ to $\Phi(-1.15)$.
- [5/9/2017] On page 636, on the fourth and fifth lines of the page, change \hat{a} to a .
- [5/9/2017] On page 637, on the fourth and fifth lines of the page, change \hat{a} to a .
- [5/9/2017] On page 839, in the solution to question 17, on the third line, change “or e ” to “or 3”.
- [5/9/2017] On page 842, in the solution to question 34, on the second line, put an “=” after $\mathbf{a}^T(\mathbf{X}'\mathbf{X})^{-1}\mathbf{a}$.
- [4/30/2017] On page 658, on the third line of the answer to Example 56E, change $0.6/0.9 = \frac{2}{3}$ to $0.6(0.9) = \frac{0.54}{1}$.
- [4/30/2017] On page 667, in the solution to Quiz 56-5, change the last line to
So the probability of category 1 is $0.401312(1 - 0.141851) = \frac{0.344385}{1}$.
- [4/27/2017] On page 702, in the answer to Example 61A, on the eighth line, change the w_t on the right side of the line to x_t .
- [4/27/2017] On page 707, on the second line of Example 62A, change w_{t+2} to w_{t-2} .
- [4/27/2017] On page 725, in the solutions to exercises 63.8–63.10, change (63.4) to (63.5).
- [4/26/2017] On page 647, in the solution to Quiz 54-3, on the second line, change 0.709910 to 1.003965.
- [4/25/2017] On page 593, in the solution to Quiz 48-1, change the final answer to 232.78.
- [4/25/2017] On page 597, in the solution to Quiz 46-1, change the last line to

$$R^2 = \frac{122}{285 + 122} = \frac{0.2998}{1}$$

- [4/25/2017] On page 630, replace the last line of the page with

$$(\mathbf{X}\mathbf{b})_1 + G_{11}(y_1 - \mu_1) = 4.75 + e^{-4.75}(105 - e^{4.75}) = \frac{4.6584}{1}$$

- [4/20/2017] On page 369, in the solution to exercise 29.12, replace the second and third lines with:

$$10 + 1.645\sqrt{\frac{600}{n}} = 20 - 0.842\sqrt{\frac{600}{n}}$$

$$2.487\sqrt{\frac{600}{n}} = 10$$

- [4/13/2017] On page 517 in the fourth paragraph, delete all sentences past the first sentence through the end of the paragraph.
- [4/13/2017] On page 939, in the solution to question 18, two lines from the end, put a negative sign in front of $\frac{4}{\ln \prod x_i}$

[3/28/2017] On page 98, in the solution to exercise 9.3, replace the last line of the solution with:

Since the number of tomatoes is an integer, the integer generating maximum profit must be either 40 or 41. Computing profit for both:

$$180(1 - e^{-40/100} - 1.2(40)) = 11.34239$$

$$180(1 - e^{-41/100} - 1.2(41)) = 11.34295$$

We see that expected profit is maximized if **41** tomatoes are bought.

[3/28/2017] On page 110, replace the solution to exercise 10.3 with the following:

The probability that the number of reports in a time interval of size h is more than 1 is proportional to h , so it is not $o(h)$. The number of dollars of loss has the same problem, and also may not be an integer-valued random variable. **(A)**

[3/25/2017] On page 70, in the solution to exercise 5.2, on the second-to-last line, interchange 0.2/0.14 and 0.3/0.14 in the matrix.

[3/25/2017] On page 70, in the solution to exercise 5.2, on the second-to-last line, interchange 0.2/0.14 and 0.3/0.14 in the matrix.

[3/25/2017] On page 718, replace the solution to Quiz 62-2 with the following:

$$\begin{aligned} x_t &= (1 - 0.7\mathbf{B}^2)w_t \\ w_t &= (1 - 0.7\mathbf{B}^2)^{-1}x_t \\ &= (1 + 0.7\mathbf{B}^2 + 0.49\mathbf{B}^4 + 0.343\mathbf{B}^6)x_t \\ x_t &= w_t - 0.7x_{t-2} - 0.49x_{t-4} + 0.343x_{t-6} - \dots \end{aligned}$$

[3/24/2017] On page 981, in the solution to question 45, on the second line, change the first root 1 to -1 .

[2/28/2017] On page 184, in the solution to exercise 16.1, on the second line, change “mean 1.5” to “mean $1/1.5$ ”. Change $1 = e^{-1.5}$ to $1 - e^{-1.5}$.

[2/11/2017] On page 956, in the solution to question 14, on the fourth line, insert a 2 before $(828.37 - 826.23)$.

[2/5/2017] On page 455, in exercise 37.8, on the second to last line, add the word “mean” before “number”.

[1/17/2017] On page 414, in exercise 32.18, change the first line of the second bullet to

Sam submits X_i in premiums on day i , where X_i is expressed in millions. Summary statistics are:

Change the first line of the fourth bullet to

Vera submits Y_i in premiums on day i , where Y_i is expressed in millions. Summary statistics are:

[11/9/2016] On page 387, in the solution to exercise 30.19, on both displayed lines, change 150,000 to 15,000,000 (once apiece).

[11/9/2016] On page 968, in the solution to question 5, on the third displayed line, the one for the second derivative, change $-\frac{x}{(1-\theta)^2}$ to $+\frac{x}{(1-\theta)^2}$.

[11/9/2016] On page 972, in the solution to question 23, on the last line, change 0.0002 to 0.002.

[10/12/2016] On page 976, in the solution to question 20, on the fourth line, change $x > \frac{k}{2}$ to $x > \frac{1}{2k}$.

[10/8/2016] On page 976, in the solution to question 17, on the fifth line, put a negative sign before $\frac{n}{\theta^2}$.

[9/27/2016] On page 355, in the solution to exercise 28.2, on the first line, change μ to 4μ .

[9/24/2016] On page 806, in question 36, change the fifth bullet to

$$\bullet (\mathbf{X}^T \mathbf{W} \mathbf{X})^{-1} = \begin{pmatrix} 8.5498 & -3.5764 \\ -3.5764 & 1.6843 \end{pmatrix}$$

[9/24/2016] On page 874, replace the last 2 lines of the solution to question 36 with

Use the weighted regression formula (equation (47.8) with $\bar{x} = 7.5$, $\bar{y} = 10.5$,

$$b_1 = \frac{(-5.5)(-9.5) + (1/5^2)(-3.5)(-5.5) + (1/15^2)(1.5)(1.5) + (1/27^2)(7.5)(13.5)}{(-5.5)^2 + (1/5^2)(-3.5)^2 + (1/15^2)(1.5)^2 + (1/27^2)(7.5)^2} = \boxed{1.75631} \quad (\text{D})$$

[9/24/2016] On page 892, in the solution to question 37, on the line for age 30 in the table, exchange 8,950,901 and 9,501,381.

[9/23/2016] On page 680, replace the answer to Example 58B, starting with the third line, with

$$(3 - 5)(12 - 13) + (7 - 5)(14 - 13) + (3 - 5)(11 - 13) = 8$$

Also, $5c_0(x, x) = 3^2 + (-1)^2 + (-2)^2 + 2^2 + (-2)^2 = 22$ and $5c_0(y, y) = (-1)^2 + 1^2 + (-2)^2 + 0^2 + 2^2 = 10$.
So

$$r_2(x, y) = \frac{8}{\sqrt{(10)(22)}} = \boxed{0.53936}$$

[9/21/2016] On page 664, in exercise 56.12, in the table, change 0.222 to 0.220 and change 0.054 to 0.056.

[9/17/2016] On page 645, replace the second and third lines of the solution to exercise 54.2 with

$$\begin{aligned} \Delta &= 2(10 \ln(10/7) + 12 \ln(1) + 15 \ln(15/20) + 18 \ln(18/19) + 20 \ln(20/25)) \\ &\quad - (10 - 7) - (12 - 12) - (15 - 20) - (18 - 19) - (20 - 25) = 3.631 \end{aligned}$$

[9/17/2016] On page 647, in the solution to Quiz 54-2, change 19.92 in the final answer to 15.92.

[9/6/2016] On page 324, in the solution to Quiz 25-2, change 3θ to 5θ and change the final answer from $\boxed{20}$ to $\boxed{120}$.

[8/18/2016] On page 672, on the 7th line of the page, the line for m_6 , change the + before 30.875 to =.

[8/5/2016] On page 95, 3 lines from the bottom, change $\sum_{j=1}^i 1/(n-j)^2$ to $\sum_{j=0}^{i-1} 1/(n-j)^2$.

[8/5/2016] On page 681, in the heading for the last formula of Table 58.1, change cvf to ccf.

[8/2/2016] On page 219, on the fourth displayed line, change the last summation index from $i < j$ to $i < j < k$.

[6/19/2016] On page 761, in question 39, in the first bullet, change "an inverse gamma" to "a gamma".

[5/6/2016] On page 873, in the solution to question 25, change S_2^1 to S_1^2 and change σ_2^1 to σ_1^2 .

[5/6/2016] On page 923, in the solution to question 25, change S_2^1 to S_1^2 and change σ_2^1 to σ_1^2 .

- [5/2/2016] On page 638, on the sixth line of the first paragraph of Section 54.2, change “scaler” to “scalar”.
- [5/2/2016] On page 785, in question 23, on the third line, change $\text{Var}(Y)$ to $\text{Var}(Y_3)$.
- [5/2/2016] On page 790, in question 37, in the fourth and sixth bullets, remove the parentheses and the inversion sign -1 from $\mathbf{X}'\mathbf{W}\mathbf{X}$.
- [5/2/2016] On page 844, replace the solution to question 45 with
The predictions are

$$\begin{aligned}x_{2|1} &= 182 \\x_{3|2} &= 0.2(138) + 0.8(182) = 173.2 \\x_{4|3} &= 0.2(150) + 0.8(173.2) = 168.56 \\x_{5|4} &= 0.2(192) + 0.8(168.56) = 173.248\end{aligned}$$

The sum of squared errors is $(-44)^2 + (-23.2)^2 + 23.44^2 + (-3.752)^2 = \boxed{3037.751}$. (E)

- [5/2/2016] On page 863, in the solution to question 37, remove the parentheses and the inversion sign -1 from $\mathbf{X}'\mathbf{W}\mathbf{X}$. After “matrix”, add “of the sixth bullet”.
- [5/2/2016] On page 919, in the solution to question 24, on the third displayed line, the integrand should be divided by α^n :

$$\int_0^\alpha \frac{ny^n dy}{\alpha^n}$$

- [5/1/2016] On page 549, 3 and 4 lines below equation (46.3), change i^{th} to $i + 1^{\text{st}}$, once on each line.
- [4/17/2016] On page 864, in the solution to question 45, replace the last tw lines with

$$\begin{aligned}\hat{x}_{23|22} &= 0.4(6) + (-6) - 0.4(22) + 0.8(-2) = -14 \\ \hat{x}_{24|22} &= 0.4(-14) + 13 - 0.4(-6) = \boxed{9.8} \quad (\text{C})\end{aligned}$$

- [4/11/2016] On page 853, in the solution to question 36, on the last two lines (once apiece) change 487.22 to 478.22.
- [4/10/2016] On page 61, on the third line from the end of the page, change the left side of the equation to $(\mathbf{I} - \mathbf{P}_T)\mathbf{S}$.
- [4/10/2016] On page 67, in question 5.2, on the last line, delete the exponent -1 from $\begin{pmatrix} a_{22}/d & -a_{12}/d \\ -a_{21}/d & a_{11}/d \end{pmatrix}$.
- [4/10/2016] On page 68, in question 5.4, on the last line, delete the exponent -1 from $\begin{pmatrix} a_{22}/d & -a_{12}/d \\ -a_{21}/d & a_{11}/d \end{pmatrix}$.
- [4/7/2016] On page 640, in Example 54D, third bullet, remove the “a” before $\hat{\beta}_0$. In the answer to Example 54D, change the displayed line to

$$S = \frac{6.257(15.2 - 13.75)^2 + 0.114(-0.2 - 0)^2 + 2(-0.829)(15.2 - 13.75)(-0.2 - 0)}{6.971} = \boxed{1.972}$$

- [4/4/2016] On page 843, the solution to question 36 is incorrect. The correct solution is

Interaction is the product of gender and marital status and thus only applies to male single.

$$g(\mu) = -0.23 + 0.07 - 0.04 = -0.20$$

$$\mu = e^{-0.20} = 0.818731$$

For a Poisson distribution with mean 0.818731, $p_0 + p_1 = e^{-0.818731}(1 + 0.818731) = 0.802044$. The probability of 2 or more claims is $1 - 0.802044 = \mathbf{0.1980s}$. (E)

[4/3/2016] On page 627, in exercise 52.12, the matrix for $\mathbf{X}'\mathbf{W}$ (the second bullet) is missing two columns. Replace that bullet with

$$\bullet \mathbf{X}'\mathbf{W} = \begin{pmatrix} 1.6487 & 4.4817 & 7.3891 & 20.0855 \\ 4.9462 & 22.4084 & 44.3343 & 160.6843 \end{pmatrix}$$

[4/3/2016] On page 630, in the solution to exercise 52.12, on the second-to-last line, replace the first 2×2 matrix with the following matrix:

$$\begin{pmatrix} 1.6487 & 4.4817 & 7.3891 & 20.0855 \\ 4.9462 & 22.4084 & 44.3343 & 160.6843 \end{pmatrix}$$

[3/23/2016] On page 629, in the solution to exercise 52.9, replace the clause starting with “the weight” at the end with “the weight is $1/\exp(272) = 0$.”

[3/21/2016] On page 453, on the fourth displayed line, change $(\theta - \mu^2)$ to $(\theta - \mu)^2$.

[3/21/2016] On page 474, on the first line of the answer to Example 39E, change $F(y) = e^{-y/\theta}$ to $F(y) = 1 - e^{-y/\theta}$.

[3/15/2016] On page 528, in the solution to exercise 44.3, on the second and third lines, change 3.65285 with 3.62853 (once on each line).

[3/12/2016] On page 260, in exercise 23.16, in the table, l_{64} should be 69,800 with a comma.

[3/12/2016] On page 267, in the solution to exercise 23.9, on the second displayed line, change the left side from $3p_{60}$ to $3p_{60} q_{63}$.

[3/12/2016] On page 581, in the solution to exercise 47.30, on the fifth line, the denominator should be 69,843/3.

[3/12/2016] On page 603, in the solution to exercise 49.7, on the third line, change -0.500 to -0.802 .

[3/12/2016] On page 604, in the solution to exercise 49.11, change the third through fifth displayed lines to

$$74.8084(1 - h_{11})^2 = 58.1254h_{11}$$

$$74.8084h_{11}^2 - 207.7422h_{11} + 74.8084 = 0$$

$$h_{11} = \mathbf{0.4252}, 2.3518$$

On the last line, change 2.3638 to 2.3518.

[3/12/2016] On page 665, in the solution to exercise 56.8, on the third line, change “ $\pi < 0.4$ for two nonevents” to “ $\pi < 0.4$ for three nonevents”.

[3/12/2016] On page 666, in the solution to exercise 56.12, change the solution, starting with “For New York” on the fourth line, to

For New York, the odds of the first two categories are $0.946/(1 - 0.946) = 17.51852$, so for Chicago the odds of the first two categories are $17.51852(2.31125/2.62319) = 15.85262$. The probability of

the first two categories for Chicago is $15.85262/16.85262 = 0.93916$. The probability of medium risk for Chicago is $0.93916 - 0.698 = \boxed{0.241}$.

[3/12/2016] On page 675, replace the solution to exercise 57.3 with

The series divided by trend is

	Q1	Q2	Q3	Q4
2011			1.21426	0.73943
2012	0.96703	1.00894	1.27059	0.70588
2013	0.98182	1.01995		

The column averages are 0.97443, 1.01444, 1.24242, and 0.72266. Their average is 0.98849. The seasonal adjustment factor for third quarter is $1.24242 + (1 - 0.98849) = \boxed{1.25394}$.

[3/12/2016] On page 683, in the solution to exercise 58.4, on the second line, switch the numerator and denominator so that it is

$$\frac{\sum_{t=3}^{21}(y_t - \bar{y})(y_{t-2} - \bar{y})}{\sum_{t=1}^{21}(y_t - \bar{y})^2}$$

[3/12/2016] On page 717, in the solution to exercise 62.16, on the seventh line, change \hat{w}_6 from 3.7 to -3.7 .

[3/12/2016] On page 725, in the solution to exercise 63.7, on the second line, change the denominator from $1 - \beta^2$ to $1 - \alpha^2$.

[3/12/2016] On page 730, in the solution to exercise 64.4, on the last line, change the equals sign to a negative sign: "... is $-0.3 + \dots$ ".

[3/4/2016] On page 97, in exercise 9.8, on the second line, insert "the probability" between "Calculate" and "that".

[2/29/2016] On page 224, in exercise 20.7, on the first line, change 0.2 to 0.1.

[2/29/2016] On page 226, in the solution to exercise 20.3, on the second line, a $1 -$ is missing. It should read

$$r(\mathbf{p}) = p_1 p_2 (1 - (1 - p_3)(1 - p_4)) = 0.564$$

[2/29/2016] On page 245, in exercise 22.10, in the first bullet, change $k \leq T_x \leq k + 1$ to $k \leq T_x < k + 1$.

[2/29/2016] On page 252, 4 lines below Example 23F, in the definition of certain-and-life annuity, change "if alive" to "is alive".

[2/29/2016] On page 258, in exercise 23.9, three lines from the end, add "on an individual age 60" after "An insurance".

[2/23/2016] On page 145, the final answer to Quiz 13-1 should be $10/4$.

[2/17/2016] On page 197, in Example 18C, change "backward" to "forward".

[2/17/2016] On page 206, in the solution to exercise 18.9, on the fourth line, change δ_2 to λ_2 .

[2/8/2016] On page 234, in the solution to Quiz 21-1, change the displayed line to:

$$\int_3^6 \left(1 - \frac{(t-3)^3 dt}{27} \right) = 3 - \left(\frac{(t-3)^4}{4(27)} \right)_3^6 = 2\frac{1}{4}$$

Change the final answer to $5\frac{1}{4}$.

- [2/8/2016] On page 886, in the solution to question 42, on the first line, change 0.420 to 0.320.
- [2/2/2016] On page 324, the final answer to Quiz 25-1 should be 0.225664.
- [2/2/2016] On pages 627–628, in the solution to exercise 52.1, on the first displayed line, change the last numerator from e^{2x} to e^x . On the last displayed line, remove the exponent 2 from the numerator.
- [1/29/2016] On page 657, on the second line of Quiz 56-4, change “event 1” to “event 2”.
- [1/29/2016] On page 667, in the solution to Quiz 56-4, on the second line, change “event 1” to “event 2” in two places.
- [1/28/2016] On page 50, in the solution to Quiz 3-1, replace the last line with
Notice that there are two classes: {1,3,4,5} and {2}.
- [1/28/2016] On page 69, in exercise 5.7, on the fourth line, replace “remains in” with “spends in”.
- [1/28/2016] On page 83, the solution to exercise 7.5 is incorrect. The correct solution, starting after the first two lines, is

$$\begin{aligned}
 P_{45}\pi_4 &= P_{54}\pi_5 \\
 0.3\pi_4 &= 0.25\pi_5 \\
 \pi_4 &= \frac{5}{6}\pi_5 \\
 P_{34}\pi_3 &= P_{43}\pi_4 \\
 0.6\pi_3 &= 0.7\pi_4 \\
 \pi_3 &= \frac{7}{6}\pi_4 = \left(\frac{7}{6}\right)\left(\frac{5}{6}\right)\pi_5 = \frac{35}{36}\pi_5 \\
 P_{23}\pi_2 &= P_{32}\pi_3 \\
 0.5\pi_2 &= 0.4\pi_3 \\
 \pi_2 &= \frac{4}{5}\pi_3 = \left(\frac{4}{5}\right)\left(\frac{35}{36}\right)\pi_5 = \frac{7}{9}\pi_5 \\
 P_{12}\pi_1 &= P_{21}\pi_2 \\
 0.8\pi_1 &= 0.5\pi_2 \\
 \pi_1 &= \frac{5}{8}\pi_2 = \left(\frac{5}{8}\right)\left(\frac{7}{9}\right)\pi_5 = \frac{35}{72}\pi_5
 \end{aligned}$$

The stationary probabilities add up to 1, so

$$\begin{aligned}
 \pi_5 \left(\frac{35}{72} + \frac{7}{9} + \frac{35}{36} + \frac{5}{6} + 1 \right) &= 1 \\
 \pi_5 &= \frac{72}{293} = \boxed{0.245734}
 \end{aligned}$$

- [1/28/2016] On page 93, in the first sentence of the third paragraph, change “is” to “it”.
- [1/28/2016] On page 96, on the second displayed line, change $(n - 1)$ to $(n - 1)!$.
- [1/28/2016] On page 96, in exercise 9.1, change the first word to “A”.
- [1/28/2016] On page 96, in exercise 9.3, on the last line, change “strawberries” to “tomatoes”.
- [1/28/2016] On page 101, the first clause of the third paragraph, “the above list of stochastic processes”, is referring to the list of four stochastic processes on page 23.

[1/27/2016] On page 61, on the first line of the third paragraph, change $P_i i$ to P_{ii} .

[1/25/2016] On page 185, replace the solution to exercise 16.5 with

The expected amount of time in each state is the reciprocal of the sum of the q_s for that state:

- $1/q_{12} = 1/0.2 = 5$ for state 1
- $1/(q_{23} + q_{24}) + 1/(0.3 + 0.1) = 2.5$ for state 2
- 2 for state 3
- 5 for state 4

There are two paths back to state 1. Both paths go through state 2. One path then goes through state 3; the other through state 4. The expected amount of time for the path through state 3 is $5 + 2.5 + 2 = 9.5$. The amount of time for the path through state 4 is $5 + 2.5 + 5 = 12.5$. The probability of the path through state 3 is

$$\frac{q_{23}}{q_{23} + q_{24}} = \frac{0.3}{0.3 + 0.1} = \frac{3}{4}$$

So expected time until return to state 1 is $\frac{3}{4}(9.5) + \frac{1}{4}(12.5) = \boxed{10.25}$.

[1/25/2016] On page 641, two lines below equation (54.7), change $h(y) = 3y^{2/3}$ to $h(y) = (3/2)y^{2/3}$.

[1/12/2016] On page 90, in the solution to exercise 8.4, on the first line of the second paragraph, change $0.2 + 0.8$ to $0.2 + 0.6$. On the first line of the third paragraph, change $0.2 + 0.8 < 0.907 < 0.2 + 0.8 + 0.1$ to $0.2 + 0.6 < 0.907 < 0.2 + 0.6 + 0.2$.

[1/8/2016] On page 665, in the solution to exercise 56.1, change 12.42 to 0.42.

[12/31/2015] On page 977, in the solution to question 24, replace the table with the following table:

Career	Psychology	c	d
1	2	8	1
2	3	7	1
3	6	4	3
4	5	4	2
5	1	5	0
6	9	1	3
7	4	3	0
8	7	2	0
9	10	0	1
10	8	0	0

[12/18/2015] On page 90, in the solution to exercise 8.2, the final answer should be 0.05.

[12/17/2015] On page 715, in the solution to exercise 62.8, change the final answer from -0.43 to 0.43 .

[12/17/2015] On page 717, in the solution to exercise 62.19, on the second to last line, in the last parentheses, change $0.3\mathbf{B}$ to $0.3\mathbf{B}^2$.

[12/13/2015] On page 695, in exercise 59.11, on the fourth line, change 110 to 100.

[12/13/2015] On page 695, in the solution to exercise 59.14, on the first line, replace β_n and the two β_{n-1} s with b_n and b_{n-1} respectively.

[12/13/2015] On page 705, in exercise 61.8, on the sixth and seventh lines, change y to x .

[12/13/2015] On page 706, in the solution to exercise 61.5, on the third line, change 0.2 to -0.2 and $10, -1$ to $-10, 1$.

[12/10/2015] On page 583, replace the solution to exercise 47.38 with

We wish to use equation (47.5). Since $s_{\hat{\beta}_j}^2 = s^2$ times the jj coefficient of $(\mathbf{X}'\mathbf{X})^{-1}$, it follows that $s_{\hat{\beta}_1}^2 / s^2 = 0.0161$. The first column of the \mathbf{X} matrix is all 1s, so the upper left entry of $\mathbf{X}'\mathbf{X}$ is $n = 5$. The 01 entry of $\mathbf{X}'\mathbf{X}$ is $\sum x_{i1} = 61$. Also, the 11 entry of $\mathbf{X}'\mathbf{X}$ is $\sum x_{i1}^2 = 919$. Therefore, the denominator of equation (47.5) is

$$\sum_{i=1}^n (x_{i1} - \bar{x})^2 = \sum_{i=1}^n x_{i1}^2 - 2\bar{x}_1 \sum_{i=1}^n x_{i1} + n\bar{x}_1^2 = 919 - \frac{61^2}{5} = 174.8$$

We now have everything we need in equation (47.5), after dividing both sides by s^2 :

$$0.0161 = \frac{\text{VIF}_1}{174.8}$$

$$\text{VIF}_1 = \boxed{2.814}$$

[12/10/2015] On page 591, in the solution to exercise 48.7, on the second displayed line, change 21 to 20. On the third and fourth displayed lines, change $\frac{8}{7}$ to $\frac{6}{5}$. On the fourth displayed line, change 0.278595 to 0.242525. On the fifth displayed line, change N to n and then put parentheses around $n - (p + 1)$.

[12/10/2015] On page 604, in the solution to exercise 49.9, replace the last line with

That means that $a = 51 - 27.60 = \boxed{23.40}$ and $b = 51 + 27.60 = \boxed{78.60}$

[12/8/2015] On page 252, in Example 23G, on the third line, change $i = 0.04$ to $i = 0.06$. Change the answer to The present value of a 10-year certain annuity-due of 1 is

$$\frac{1 - 1/1.06^{10}}{0.06/1.06} = 7.8017$$

The APV of our annuity is

$$200(7.8017 + (0.45120)(8.5693)) = \boxed{2333.63}$$

[12/8/2015] On page 555, in the solution to exercise 46.4, on the fifth line, put a hat over both β_1 s.

[12/7/2015] On page 268, in the solution to exercise 23.15, on the first displayed line, change $E[Z]$ to $E[Z/1000]$. On the second displayed line, change $E[Z^2]$ to $E[(Z/1000)^2]$.

[12/7/2015] On page 540, in exercise 45.21, in the first column of the table, change x_2, x_3, x_4 to x_1, x_2, x_3 respectively. In the matrix for $(\mathbf{X}'\mathbf{X})^{-1}$, change second row second column entry from 1.2 to 12.

[12/7/2015] On pages 545–546, in the solution to exercise 45.21, change the last two lines to

$$\hat{\boldsymbol{\beta}} = (\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{y} = \frac{1}{30} \begin{pmatrix} 60.5 \\ -27 \\ -8.25 \\ 31.75 \end{pmatrix}$$

$$y(1, 1, 1) = \frac{1}{30}(60.5 - 27 - 8.25 + 31.75) = \boxed{1.9}$$

[12/6/2015] On page 220, replace the answer to Example 20E with

As discussed in Example 19D, the minimal cut sets are $C_1 = \{1, 2\}$, $C_2 = \{1, 3, 5\}$, $C_3 = \{2, 3, 4\}$, and $C_4 = \{4, 5\}$. The probability of j components failing is $(1 - p)^j$. So the first lower bound is

$$r(\mathbf{p}) \geq 1 - \sum \Pr(F_i) = 1 - 2(1 - p)^2 - 2(1 - p)^3$$

since two minimal cut sets have 2 components and two have 3 components. For the six unions of 2 minimal cut sets, $C_1 \cup C_2$, $C_1 \cup C_3$, $C_1 \cup C_4$, $C_2 \cup C_4$, $C_3 \cup C_4$ have 4 components and $C_2 \cup C_3$ has 5. So

$$r(\mathbf{p}) \leq 1 - 2(1 - p)^2 - 2(1 - p)^3 + 5(1 - p)^4 + (1 - p)^5$$

For example, if $p = 0.8$, then $0.904 \leq r(\mathbf{p}) \leq 0.91232$.

[12/5/2015] On page 154, in exercises 14.8 and 14.9, change the second and third bullets to

- For a good driver, claims are submitted in a Poisson process at an annual rate of 0.2.
- For a bad driver, claims are submitted in a Poisson process at an annual rate of 0.4.

[12/5/2015] On page 157, change the solution to exercise 14.8 to

Let X_{1i} be the Poisson process for the i^{th} good driver, $1 \leq i \leq 30$, and X_{2i} the Poisson process for i^{th} bad driver, $1 \leq i \leq 20$. Then claims from all drivers, $Y = \sum_{i=1}^{30} X_{1i} + \sum_{i=1}^{20} 20X_{2i}$, is itself a Poisson process. The monthly parameter for Y is $(30(0.2) + 20(0.4))/12 = 7/6$. The probability of at least one claim is $1 - e^{-7/6} = \boxed{0.6886}$.

[12/5/2015] On page 162, on the first line of Quiz 15-1, add "expected" between "The" and "number of customers".

[12/5/2015] On page 184, in the box on top of the page, on the last line, change μ_{ij} to q_{ij} .

[12/5/2015] On page 191, in the second bullet of exercises 17.2 and 17.3, change "4 per hour" to "15 minutes".

[12/5/2015] On page 195, on the third line of the second paragraph of Section 18.1, change $P_{ii}(t) = 1 - e^{-\lambda_i t}$ to $P_{ii}(t) = e^{-\lambda_i t}$.

[12/5/2015] On page 203, in the third bullet of exercise 18.8, change 2 to $1\frac{2}{3}$.

[12/5/2015] On page 206, in the solution to exercise 18.8, on the fourth line, change 0.5 to 0.6.

[12/3/2015] On page 70, change the last sentence of the solution to exercise 5.1 to

We see that $s_{11} = 3$ and $s_{12} = 1$. Thus an expected 3 hours (including 11-12) are spent in state 1, 1 expected hours in state 2, and 1 hour in state 0, for a total of **5 hours**.

[12/3/2015] On page 77, in the solution to exercise 6.6, on the fourth line, change the three x s to π_0 s.

[12/2/2015] On page 55, in exercise 4.8, on the first line, change the second-to-last word to "insured's".

[12/2/2015] On page 134, in exercise 12.29, on the second line, change the sixth word to "king's".

[12/2/2015] On page 449, in the solution to exercise 36.11, on the first line, change the sixth word to "worker's".

[12/2/2015] On page 503, the solution to exercise 41.1 is incorrect. The correct solution is

After subtracting 34, the numbers are $\{-4, 1, 3, 5, 9\}$. The ranks of the absolute values are $\{3, 1, 2, 4, 5\}$. The sum of the ranks of the positive values is $T^+ = 1 + 2 + 4 + 5 = 12$. The sum of the ranks of the negative values is $T^- = 3$. It is a two-sided test, so the statistic is $w = \min(T^+, T^-) = 3$. The statistic T^+ can equal 0, 1, or 2 in one way apiece, and 3 either as 1 + 2 (the two lowest rank items are positive) or as 3. Similarly T^- can be 3 or less in five ways. So the probability that T is less than or equal to 3 is $10/2^5 = \boxed{0.3125}$.

[12/2/2015] On page 520, replace the solution to exercise 43.4 with

The slope of the line is greater than 45° in the interval (3,8), so that is the interval in which the fitted distribution puts too little weight.

[12/1/2015] On page 413, exercise 32.15 can only be done with a computer.

[12/1/2015] On page 417, the solution to exercise 32.15 is incorrect. The distribution of the square root of F is a T distribution with negative and positive tails. The positive square root of the 97.5th percentile of the F distribution is the 98.75th of the T distribution, the value x with $\Pr(T > x) + \Pr(T < -x) = 0.025$. The 98.75th percentile of the T distribution, not given in the tables, is 2.360.

[12/1/2015] On page 427, on the first two lines of the answer to Example 34A, change $\frac{1}{\sqrt{2\pi}}$ to $\frac{1}{(2\pi)^{n/2}}$.

[12/1/2015] On page 440, on the third line of the second paragraph of Section 35.3, replace “and has one mode” with “has one mode, and continuously goes to 0 on both sides of the mode.”

[12/1/2015] On page 485, on the third line of the warning box, change “more then” to “more than”.

[12/1/2015] On page 487, change exercise 40.5 to

Let X be the random variable underlying the first sample and Y the random variable underlying the second sample.

Using the normal approximation, construct the smallest interval with at least 95% confidence for the median of $Y - X$.

[12/1/2015] On page 487, change exercise 40.6 to

Let X be the random variable underlying the first sample and Y the random variable underlying the second sample.

Without using the normal approximation, construct the smallest interval with at least 95% confidence for the median of $Y - X$.

[11/28/2015] On page 346, on the first line, change $\Pr(X > 3 | H_1)$ to $\Pr(Y > 3 | H_1)$.

[11/27/2015] On page 345, in the answer to Example 28G, on the first displayed line, change p_k to p_i .

[11/12/2015] On page 688, on the second line of R code, change “ β and γ ” to “ α , β , and γ ”.