

## Errata and updates for ASM Exam P Manual (First Edition Second Printing) sorted by date

Practice Exam 2:22 and 6:25 are defective in that none of the five answer choices is correct.

[8/14/2018] On page 4, on the third line and fourth lines after the answer to Example 1B, change “unions” to “intersections” in two places.

[6/25/2018] On page 480, in the solution to question 16, change answer key (C) to (B).

[2/19/2018] On page xii, on line 14, change  $x = 1 \Rightarrow x = 0$  to  $x = 1 \Rightarrow y = 0$ .

[1/26/2018] On page 20, 3 lines above Example 2C, remove the extra comma after “type 1”.

[1/10/2018] On page xi, on the last line, change “at 2” to “at 3”.

[12/8/2017] On page 188, in the solution to exercise 14.9, on the second line, change “if equal” to “is equal”.

[11/28/2017] On page xii, on the fifth line, change  $\int_0^2$  to  $\int_0^3$ .

[11/7/2017] On page 84, in the Proof of Alternative Formula for Mean, on the third line, change  $c = 1$  to  $c = -1$ . On the last line, change  $1 - F(x) = 0$  to  $(1 - F(x))x = 0$ .

[11/7/2017] On page 508, in the solution to question 20, on the fifth line, replace  $\Pr(X > 0)$  with  $\Pr(X = 0)$ . On the seventh line, replace  $E[X^2]$  with  $E[X]^2$ .

[10/15/2017] On page 427, in question 10, on the third line, replace  $p(x)$  with  $p(n)$ .

[9/27/2017] On page 515, replace the solution to question 11 with

We want the 60<sup>th</sup> percentile of correct answers to be 17.5, rather than 18, to take the continuity correction into account. The number of correct answers is binomial with parameters 30 and  $p$ . The mean is  $30p$  and the variance is  $30p(1 - p)$ . The 60<sup>th</sup> percentile of a standard normal distribution is 0.253.

$$\begin{aligned} 30p + 0.253\sqrt{30p(1-p)} &= 17.5 \\ 0.253\sqrt{30p(1-p)} &= 17.5 - 30p \\ 1.92027p - 1.92027p^2 &= 900p^2 - 1050p + 306.25 \\ 901.92p^2 - 1051.92p + 306.25 &= 0 \\ p &= \boxed{0.5604}, 0.6059 \end{aligned}$$

0.6055 is spurious, since it works only with the negative square root of  $30p(1 - p)$ . **(B)**

[9/23/2017] On page 91, in exercise 7.12, on the fourth line, change “ $a > 0$ ” to “ $a > -1$ ”.

[9/23/2017] On page 98, in the solution to exercise 7.13, on the second line from the end, insert “0.05” before “ $K(1/3 + 2/4 + 3/5)$ ”.

[9/19/2017] On page 452, in question 14, multiply the five answer choices by 0.1:

(A) 197.8                      (B) 203.9                      (C) 207.0                      (D) 213.1                      (E) 217.2

[9/19/2017] On page 505, in the solution to question 6, on the line after “Set this equal to 2000”, change  $1000e^{0.25}$  to  $1000^{0.25}u^{0.75}$ .

[9/19/2017] On page 507, in the solution to question 14, replace the last three lines with

$$\begin{aligned} \mathbf{E} \left[ 1000 \max \left( 0, \frac{5-T}{5} \right) \right] &= 1000 \int_0^5 0.1 \left( \frac{5-t}{5} \right) e^{-t/10} dt \\ &= 1000 \left( \frac{5-t}{5} (-e^{-t/10}) \right) \Big|_0^5 - 0.2 \int_0^5 e^{-t/10} dt \\ &= 1000 (1 - 2(1 - e^{-0.5})) = \boxed{213.06} \quad (\mathbf{D}) \end{aligned}$$

[9/16/2017] On page 470, in the solution to question 13, 6 lines and 4 lines from the end (once apiece), change  $100\theta(2 + \theta)$  to  $100(2 + \theta)$ ; delete  $\theta$ .

[9/14/2017] On page 345, in the solution to exercise 24.8, on the second line, change  $\mathbf{E}[X | Y = 10]$  to  $\mathbf{E}[X | Y = 10]$ .

[9/11/2017] On page 345, in the solution to exercise 24.5, on the fourth line, replace  $\rho^2(1 - \sigma_Y^2)$  with  $\sigma_Y^2(1 - \rho^2)$ .

[9/4/2017] On page 97, in the solution to exercise 7.10, on the line for  $F(1^-)$ , remove the negative sign before  $\frac{1}{8}$ .

[9/4/2017] On page 239, in the solution to exercise 17.7, on the first displayed line, change  $f_X(5)$  to  $f_X(0.5)$ .

[8/24/2017] On page 56, in the solution to exercise 4.11, on the last line, change  $0.001/0.0071$  to  $0.0001/0.0071$ .

[8/16/2017] On page 379, in exercise 27.13, on the displayed line, put a negative sign in front of the first  $\infty$  on the right.

[8/16/2017] On page 391, on the second line of the answer to Example 28C, change  $\sqrt{y}$  to  $\sqrt{y}$ . On the fourth line, change  $|h_i(y)|$  to  $|h'_i(y)|$ .

[8/15/2017] On page 357, in the solution to exercise 25.12, on the last line of the page, change 2,000,000 to 1,000,000.

[8/15/2017] On page 381, in the solution to exercise 27.1, on the second to last line of the page, delete the negative sign after the equals sign.

[8/13/2017] On page 237, in the solution to exercise 17.2, on the displayed line, replace  $\Pr(A \cup B)$  with  $\Pr(A \cap B)$ .

[8/13/2017] On page 278, in formula (20.8), replace  $i = 1$  at the bottom of the summation sign with  $i = 0$ .

[8/13/2017] On page 316, in the solution to exercise 22.15, on the third displayed line, replace  $dy$  with  $dx$ .

[8/6/2017] On page 162, replace the solution to exercise 12.12 with the following:

With no deductible, the expected payment for a uniform distribution is the midpoint of the interval, or 500.

With a deductible  $d$ , the expected payment is the probability that the loss is above the deductible,  $1 - d/1000$ , times the midpoint of the payment after the deductible,  $(1000 - d)/2$ . So we want

$$\begin{aligned} \left( 1 - \frac{d}{1000} \right) \left( \frac{1000 - d}{2} \right) &= 0.25(500) = 125 \\ \left( \frac{1000 - d}{1000} \right) \left( \frac{1000 - d}{2} \right) &= 125 \\ (1000 - d)^2 &= 125(2)(1000) = 250,000 \\ 1000 - d &= 500 \\ d &= \boxed{500} \quad (\mathbf{C}) \end{aligned}$$

[8/4/2017] On page 331, in the solution to exercise 23.3, on the second-to-last line, put  $\Phi$  before  $\left(\frac{-3}{\sqrt{4}}\right)$ .

[7/24/2017] On page 289, in the solution to exercise 20.21, on the first line of the page, change “admission” to “admissions”. On the third line of the page, change  $(0.2^2)$  to  $(0.2)$ .

[7/20/2017] On page 232, replace the second line with

$$\text{Var}(Y | X = 0.2) = \frac{0.316}{0.648} - \left(\frac{0.424}{0.648}\right)^2 = \boxed{0.059518}$$

[7/20/2017] On page 253, replace the solution to exercise 18.7 with:

Use the double expectation formula. Let  $W$  be the sentence and  $X$  be the amount of time in prison. Then

$$\begin{aligned} \mathbf{E}[X] &= \Pr(\text{parole}) \mathbf{E}[X | \text{parole}] + (1 - \Pr(\text{parole})) \mathbf{E}[X | \text{no parole}] \\ &= \frac{2}{3} \mathbf{E}[X | \text{parole}] + \frac{1}{3}(4.5) \end{aligned}$$

To calculate  $\mathbf{E}[X | \text{parole}]$ , we use the double expectation formula again. Let  $Y = X | \text{parole}$ . If  $W < 4$ , then the criminal is expected to serve 2 years; otherwise he is expected to serve  $W/2$ .

$$\mathbf{E}[Y] = \Pr(W < 4) \mathbf{E}[Y | W < 4] + \Pr(W \geq 4) \mathbf{E}[Y | W \geq 4] = \frac{1}{3}(2) + \frac{2}{3}(2.5) = \frac{7}{3}$$

Putting our two calculations together,

$$\mathbf{E}[X] = \frac{2}{3} \left(\frac{7}{3}\right) + \frac{1}{3}(4.5) = 3\frac{1}{18} = \boxed{3.05556}$$

[7/20/2017] On page 478, in the solution to question 8, on the first line of the page, the first sum should be from  $n = 2$ , not  $n = 1$ .

[6/22/2017] On page 381, in exercise 27.21, on the first line, delete “independent”.

[6/16/2017] On page 375, on the last line, change  $\frac{\partial^2 M}{\partial X \partial Y}$  to  $\frac{\partial^2 M}{\partial t_1 \partial t_2}$ .

[6/16/2017] On page 376 in Table 27.1 on the last line, change the argument  $(0)$  to  $(0,0)$  in both places, and change  $\frac{\partial^2 M}{\partial t_i \partial t_j}$  to  $\frac{\partial^2 M}{\partial t_1 \partial t_2}$ .

[6/12/2017] On page 114, in the solution to exercise 8.12, on the third line, change the left side to  $1 - F(2000)$ .

[6/12/2017] On page 131, in the solution to exercise 10.10, on the second line, change “4 from 8,  $\binom{8}{4}$ ” to “4 from 9,  $\binom{9}{4}$ ”.

[6/12/2017] On page 357, in the solution to exercise 25.11, on the fifth line, change “loss size” to “payout”. On the sixth line, replace “do no” with “do not”.

[6/12/2017] On page 361, on the tenth and eleventh lines, change  $Y_i$  to  $Y$ .

[5/22/2017] On page 521, in the solution to question 25, replace the last two lines with

$$\begin{aligned} &= \frac{1000}{900} e^{-900/\mu} \Big|_{1000}^{\infty} \\ &= \frac{10}{9} (1 - e^{-0.9}) = \boxed{0.6594} \end{aligned}$$

[5/19/2017] On page 461, in question 23, on the second line, insert  $1/2$  before  $e^{-x/2}$ .

[5/9/2017] On page 209, in the solution to exercise 15.16, on the second line on the left side, change  $c_i \sum X_i$  to  $\sum c_i X_i$ .

[5/8/2017] On page 177, on the second line, change  $\mathbf{E}[g(x, y)]$  to  $\mathbf{E}[g(X, Y)]$ .

[5/8/2017] On page 429, in question 22, on the last line of the question, replace  $1/2a^3$  with  $2/a^3$ . None of the answer choices is correct.

[5/8/2017] On page 481, replace the last line of the solution to question 22 with

$$= \frac{3}{7} \left( -\frac{1}{2^2} + \frac{1}{(2/3)^2} + \frac{4}{3}(2) \right) = \frac{3}{7} \left( \frac{14}{3} \right) = \boxed{2}$$