Errata and updates for ASM Exam MLC (Sixth Edition) sorted by date

[5/13/2009] On page 934, in the solution to question 26, the v's on lines 2–4 should be changed to $1 + i$:

$$0 = (1 + i)\,{}_hV - {}_{h+1}V \qquad h = 7, 8, 9$$

Multiplying by $(1 + i)^{9-h}$ and adding up results in

$$0 = (1 + i)^3\,{}_7V - {}_{10}V$$

[5/13/2009] On page 960, in the solution to question 7, on the third and fourth displayed lines, the bounds on the second integral should be 0 to 1, not 1 and 2.

[5/10/2009] On page 671, in exercise 42.30, add the word "calendar" before "year" in (i), (ii), and (iii).

[5/10/2009] On pages 682–683, the solution to exercise 42.30 is incorrect. While the calculation of ${}_{0.25}q^{(2)}_{x+0.25}$ is correct, the calculation of ${}_{0.25}q^{(2)}_{x+0.5}$ incorrectly divides by ${}_{0.5}p^{(\tau)}_x$ instead of by ${}_{0.25}p^{(\tau)}_{x+0.25}$. In any case, the solution is too complicated. A simpler solution is:

Number the decrements with the question's item numbers, (1), (2), and (3). We need ${}_{0.5}q^{(2)}_{x+0.25}$, since the decrements are uniform by calendar year but we're starting with a resident who is alive on April 1. Let's first compute ${}_{0.25|0.5}q^{(2)}_x$, and then divide it by ${}_{0.25}p^{(\tau)}_x$.

The probability of dying in a time interval not crossing June 30 is the rate of death, 0.3, times the period of time, times the average, or midpoint, of survivors from the other two decrements, 1 and 3. For the period April 1–June 30, the midpoint of the period is May 15, or 3/8 of the way into the calendar year, and decrement 3 has not occurred yet, so

$${}_{0.25|0.25}q^{(2)}_x = 0.3(0.25)\left(1 - \tfrac{3}{8}(0.25)\right) = 0.0679688$$

For the period July 1–September 30, decrement 3 has occurred with survivorship rate 0.9, and the midpoint of the period is August 15, or 5/8 of the way into the calendar year, so

$${}_{0.5|0.25}q^{(2)}_x = 0.3(0.25)\left(1 - \tfrac{5}{8}(0.25)\right)(0.9) = 0.0569531$$

To compute ${}_{0.25}p^{(\tau)}_x$, we decrement (1) and (2) for 0.25 years:

$${}_{0.25}p^{(\tau)}_x = (1 - 0.25(0.3))(1 - 0.25(0.25)) = 0.8671875$$

The probability of dying between April 1 and September 30 is

$${}_{0.5}q^{(2)}_{x+0.25} = \frac{0.0679688 + 0.0569531}{0.8671875} = \boxed{\mathbf{0.14405}}$$

[5/10/2009] On page 735, in the solution to Example 47C, on the second and fourth lines, change e_5 to e_4.

[5/7/2009] On page 654, in the solution to exercise 41.15, on the third displayed line, move the subscript x on the (τ) in the exponent to p: ${}_tp^{(\tau)}_x$.

[5/7/2009] On page 656, in the solution to exercise 41.21, on the last line, move the exponent outside the parentheses into the denominator and remove the parentheses:

$$\frac{6{,}616{,}155^2 - 6{,}396{,}609^2}{8{,}188{,}073^2}$$

[4/29/2009] On page 847, in question 26(i), delete the words "variance of".

[4/29/2009] On page 940, in the solution to question 13, on the first line, change L_x to l_x.

[4/27/2009] On page 802, in the solution to exercise 52.5, on the sixth displayed line, delete $\frac{1}{2}$ in front of $e^{-1/2}$.

[4/27/2009] On page 815, in the solution to exercise 53.12, on the second line, change $2(1 + 1) = 2$ to $2(1 + 1) = 4$.

[4/26/2009] On page 790, in the sentence after the boldfaced sentence, and the word "know" between "not" and "how". Also, Quiz 51-1 is the same as Example 51D.

[4/26/2009] On page 902, in the solution to question 21, on the sixth line, replace 0.5 in the exponent with 5.

[4/23/2009] On page 720, in the solution to exercise 45.10, on the first displayed line, add " + 14" after $\dfrac{1000A_{35}}{\ddot{a}_{35}}$.

[4/19/2009] On page 652, in the solution to exercise 41.2, on the second line, change $0.2k^{-0.8t}$ to $0.2ke^{-0.8t}$.

[4/12/2009] On page 463, in the solution to exercise 28.3, on the third line, change "present value of future benefits" to "present value of future premiums".

[4/3/2009] On page 398, in the solution to exercise 22.53, move the right parenthesis of the second line past d:

$$ {}_{15}E_{30}\left(d + \frac{1}{\ddot{a}_{30:\overline{15}|}} - d\right) = \frac{1}{\ddot{s}_{30:\overline{15}|}} $$

[3/31/2009] On page 340, in the solution to exercise 19.31, on lines 5, 4, and 3 from the end of the solution, change ${}_{9|}\ddot{a}_x$ to ${}_{9|}\ddot{a}_{x+1}$.

[3/24/2009] On page 189, in the solution to exercise 11.7, on the 4th line of the page, there should be a negative sign before the expression:

$$ = -\left(\frac{0.02}{0.1}\right)\left(\frac{1}{1 + 0.1t}\right)\Bigg|_0^{50} $$

[3/24/2009] On page 449, in the solution to exercise 27.9, on the second to last line, change "end of the third year" to "end of the second year".

[3/10/2009] On page 242, the solution to exercise 14.2 is incorrect. The correct solution is

The benefit premium is

$$ 10{,}000A_{63} = \frac{5233}{1.12} = 4672.32, $$

so $A_{63} = 0.467232$. We use the equation

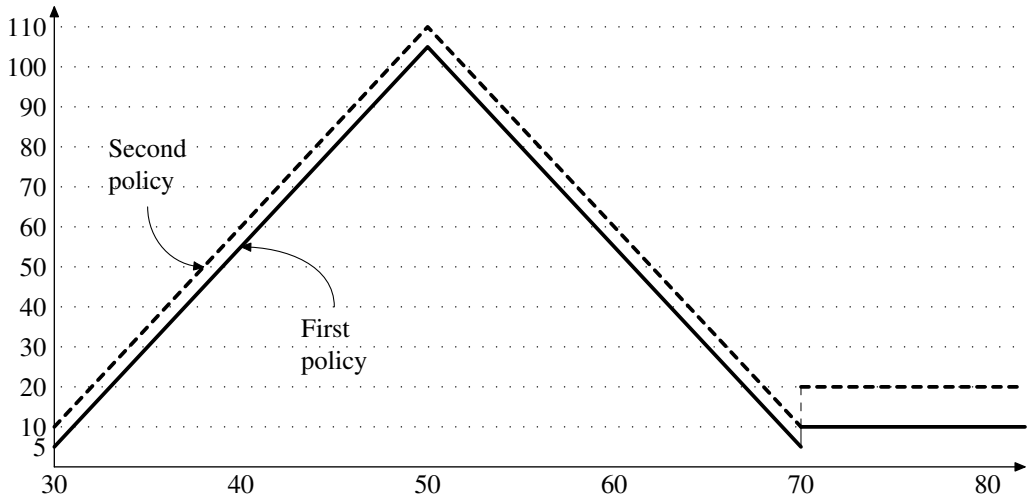
$$ A_{63} = vq_{63} + v^2 p_{63}\, q_{64} + v^2\, {}_2p_{63}\, A_{65} $$

and the values of $q_{63} = 0.01788$, $q_{64} = 0.01952$, $l_{63} = 7{,}823{,}879$, $l_{65} = 7{,}533{,}984$ to obtain:

$$ \begin{aligned} {}_2p_{63} &= \frac{l_{65}}{l_{63}} = \frac{7{,}533{,}984}{7{,}823{,}879} = 0.962947 \\ 0.467232 &= \frac{0.01788}{1.05} + \frac{(1 - 0.01788)(0.01952)}{1.05^2} + \frac{0.962947}{1.05^2}A_{65} \\ 0.467232 &= 0.017029 + 0.017389 + 0.873422A_{65} \\ A_{65} &= \frac{0.467232 - 0.017029 - 0.017389}{0.873422} = 0.49554 \end{aligned} $$

The contract premium at 65 is 1.12(10,000)(0.49554) = 5550. The earnings rate needed is $\left(\frac{5550}{5233}\right)^{1/2} - 1 =$ **0.030**. **(A)**

[3/4/2009] On page 225, Figure 13.1 is incorrect. The correct figure is



[3/1/2009] On page 465, in the solution to exercise 28.7, on the third line, replace ${}_{15}\ddot{a}_{10:\overline{30}|}$ with ${}_{15|}\ddot{a}_{10:\overline{30}|}$.

[3/1/2009] On page 465, in the solution to exercise 28.8, "the insurance formula" refers to the insurance-ratio formula, equation (29.2).

[2/23/2009] On page 257, on the second line of the third paragraph, change "present variable" to "present value".

[2/14/2009] On page 87, in the solution to exercise 6.23, on the seventh displayed line, change $\text{Var}(T(30 \wedge 30)$ to $\text{Var}(T(30 \wedge 10)$.

[2/14/2009] On page 576, in the solution to exercise 35.15, on the first displayed line of the page, put negative signs in both numerators so it reads

$$= \frac{1}{5250}\left(\frac{-(75-x)^3}{3}\bigg|_0^{70} - \frac{-5(75-x)^2}{2}\bigg|_0^{70} \right)$$

[1/24/2009] On page 373, the information in the box at the top should be used for questions 22.20–22.23 (not just for 22.20 and 22.21).

[1/20/2009] On page 16, in the solution to exercise 1.12, 3 lines from the end, change the denominator x to m.

[1/15/2009] On page 274, on the last line of the solution to Example 17B, replace ${}_{30|}\ddot{a}_{35}$ with $\ddot{a}_{35:\overline{30}|}$.

[12/29/2008] On page 115, on the 5th and 4th lines from the bottom, replace 0.471132 with 0.447576.

[11/3/2008] On page 921, in the solution to question 19, on the 3rd line from the end, replace 0.0061260 with 0.0056896.

[11/2/2008] On page 801, in exercise 52.20, on the first line after "guests arrive", add the words "in a Poisson process". Change the displayed line to

$$F(t) = t^2 \qquad 0 \le t \le 1$$

[11/2/2008] On page 804, replace the solution to exercise 52.20 with

We must determine the mean value for guests arriving and not being greeted.

Guests arriving from times $t = 0$ to 1 are always greeted. For guests arriving at time $t > 1$, the probability of not being greeted by time 2, since there is $2 - t$ minutes from time t to time 2, is the complement of $F(2 - t)$, or $1 - (2 - t)^2$. We must integrate 2 guests per minute times this function from 1 to 2. To make the integral easier, we'll change the variable $u = t - 1$ and integrate 2 guests per minutes times $1 - (1 - u)^2$ from 0 to 1 to obtain the mean value:

$$\int_0^1 2\left[1 - (1-u)^2\right] \mathrm{d}u = 2 + \frac{2}{3}(1-u)^3\Big|_0^1 = \frac{4}{3}$$

The probability that at least 1 guest is ungreeted is $1 - e^{-4/3} = \boxed{\mathbf{0.736403}}$.

[10/29/2008] On page 399, on the first line of the answer to Example 23A, change "25th" to "75th".

[10/22/2008] On page 303, in the paragraph before Example 18A, it is stated that all the formulas can be used for annuities-due by replacing δ with d. Actually, in the last formula, ${}^2\bar{A}_x = 1 - (2\delta)\,{}^2\bar{a}_x$, 2δ should be replaced with d at twice the force of interest, which is $2d - d^2$.

[10/11/2008] On page 723, in the solution to exercise 45.23, on the fourth line, change $-I$ to $+I$.

[9/13/2008] On page 762, in the solution to exercise 48.16, on the fifth line, change "is 0.1, for a product of 0.05" to "is 0.2, for a product of 0.1".

[9/7/2008] On page 160, in exercise 10.9, replace all 7 λ's with δ's.

[7/25/2008] On page 44, in the solution to exercise 3.9, on the 4th displayed line, replace the denominator vw with uv.

[7/20/2008] On page 197, in the boldfaced line, replace $1 - 100p^{\text{th}}$ with $100(1 - p)^{\text{th}}$.

[7/20/2008] On page 593, on the 2nd and 4th lines of the page, change 7.142957 to 7.142857.

[7/14/2008] On page 332, in exercise 19.31, on the fifth line, change "the" to "then".

[7/13/2008] On page 103, in the solution to exercise 7.11, on the 4th displayed line, e_x should be e'_x.

[7/13/2008] On page 266, on the last line, SOA MLC-S07:24 belongs to lesson 17.

[7/7/2008] On page 8 in Table 1.1 on the Weibull row for $f(x)$, the negative sign in the exponent of e should be outside the parenthesis: $e^{-(x/\theta)^\tau}$.

[5/24/2008] On page 808, in the second bullet, delete the s at the end of the word events.

[5/11/2008] On page 602, in the solution to exercise 37.15, there are v's missing from the second and third displayed lines. They should read

$$\begin{aligned} &= \ddot{a}_{x:\overline{10}|} + v^{10}\,{}_{10}p_x \sum_{t=0}^{9} v^t\,{}_tp_y\,{}_tp_y \\ &= \ddot{a}_{x:\overline{10}|} + {}_{10}E_x\ddot{a}_{yy:\overline{10}|} \end{aligned}$$

[5/11/2008] On page 618, in the solution to exercise 38.16, replace both $\bar{A}^{\,1}_{70:75}$'s with $\bar{A}^{\,1}_{70:75}$.

[5/11/2008] Oh page 663, on the second displayed line, the first factor in the integrand should be ${}_{u-t}p^{(\tau)}_{x+t}$. Only the pre-subscript is changed.

[5/11/2008] On page 764, the discussion starting in the 3rd paragraph calculates value only of the one-time benefits of the prototype example, namely the death benefit and the 100 paid upon disability.

[5/11/2008] On page 884, in question 25, on the last line, replace $K > 3$ with $K \geq 3$.

[5/11/2008] On page 966, in the solution to question 25, replace $K > 3$ with $K \geq 3$ in 4 places.

[5/7/2008] On page 450, in the solution to exercise 27.14, on the fourth line, change $\frac{1000}{0.06}$ to $\frac{1000}{1/0.06}$.

[5/3/2008] On page 875, at the end of the last line of question 21 after "insurance", add the words "on (40)".

[5/3/2008] On page 940, in the solution to question 12, on the third displayed line, delete the fraction $\frac{2}{3}$ on the right hand side.

[5/3/2008] On page 975, in the solution to question 19, all 4 A's and 2 a's on the left sides of the equations are continuous functions and should have bars.

[4/29/2008] On page 660, on the 5th line of the answer to Example 42A, remove the t from the exponent.

[4/29/2008] On page 906, the answer key for 16 should be C instead of D. The answer keys for 7, 17, and 27 are missing and should be B, B, and C respectively.

[4/29/2008] On page 916, the answer key for 26 should be C instead of D.

[4/24/2008] On page 898, in the solution to question 4, 3 lines from the end, the exponent in the denominator should be 4 instead of 5.

[4/23/2008] On page 809, in property 2 of the negative binomial, switch the exponents k and r:

$$\Pr(N=k)=\binom{r+k-1}{k}\left(\frac{1}{1+\beta}\right)^r\left(\frac{\beta}{1+\beta}\right)^k$$

[4/23/2008] On page 815, the solution to exercise 53.11 is incorrect starting with "The probability of 1 cod". The correct solution from that point on is:

The probability of 1 cod is

$$\int_{0.5}^{1.5} 2.8\lambda e^{-2.8\lambda}\mathrm{d}\lambda$$

Let's use our technique for evaluating an incomplete gamma integral. The integrand is for a gamma distribution with $\alpha=2$, $\theta=1/2.8$, and should have the constant 2.8^2 instead of 2.8. It represents the probability of at least 2 arrivals by time 1.5 minus the probability of at least 2 arrivals by time 0.5 with a Poisson parameter of 2.8. This is

$$\left[1-e^{-4.2}(1+4.2)\right]-\left[1-e^{-1.4}(1+1.4)\right]=0.922023-0.408167=0.513856$$

Divide by the missing constant: $0.513856/2.8=0.183520$.

The probability of 2 or more cod is $1-0.082715-0.183520=$ **0.73377**.

[4/23/2008] On page 830, the solution to exercise 54.29 is incorrect. The correct solution is

Severity is a mixture distribution with weights 0.527332 (as calculated in the previous exercise) and the complement, 0.472668. Let X be the damage in millions. Since an exponential is memoryless, the distribution of the excess damage amount over 3,000,000 given that the damage is greater than 3,000,000, or $X-3|X>3$, is the same as the unconditional distribution. So the moments are the same. Moreover, the standard deviation of $X|X>3$ (which is what we want to calculate) is the same as the standard deviation of $X-3|X>3$, since subtracting a constant from a random variable does not affect the standard deviation. So we'll compute $\mathrm{Var}(X-3|X>3)$.

Let X_1 and X_2 be the damage of windstorms and floods in millions respectively; X is still the damage of the

mixture in millions. The second moment of an exponential is twice the mean squared. So

$$\begin{aligned} E[X-3 \mid X>3] &= 0.527332E[X_1-3 \mid X_1>3] + 0.472668E[X_2-3|X_2>3] \\ &= 0.527332(1) + 0.472668(2) = 1.472668 \\ E[(X-3)^2 \mid X>3] &= 0.527332[2(1^2)] + 0.472668[2(2^2)] = 4.836007 \\ \text{Var}(X-3 \mid X>3) &= 4.836007 - 1.472668^2 = 2.667526 \end{aligned}$$

The standard deviation is $1{,}000{,}000\sqrt{2.667256} =$ **1,633,174**.

[4/7/2008] On page 634, in the table of exercise 40.7, change both subscripts $x+t-1$ to x.

[4/7/2008] On page 753, on the last line, put a subscript 1 on ${}_3Q^{(1,4)}$.

[4/7/2008] On page 811, replace Quiz 53-2 with:

For policyholders under dental policies:

2/3 of them submit claims in a Poisson process at a rate of 2 per year.

1/3 of them submit claims in a Poisson process at a rate of 0.5 per year.

A group has 100 policyholders selected at random.

Calculate x for which the probability that the total number of claims from this group over the course of 1 month is less than x is at least 95%, using a normal approximation.

[4/7/2008] On page 816, replace the solution to Quiz 53-2 (note that the quiz itself is also replaced; see the above) with

Since policyholders are selected at random, the number of claims from each policyholder is a *mixture of Poisson distributions*. The mean number of claims (N) in a month for a policyholder is

$$E[N] = \left(\frac{2}{3}\right)\left(\frac{2}{12}\right) + \left(\frac{1}{3}\right)\left(\frac{0.5}{12}\right) = 0.125$$

The second moment of the number of claims is

$$E[N^2] = \left(\frac{2}{3}\right)\left[\left(\frac{2}{12}\right)^2 + \frac{2}{12}\right] + \left(\frac{1}{3}\right)\left[\left(\frac{0.5}{12}\right)^2 + \frac{0.5}{12}\right] = 0.144097$$

So the variance is

$$\text{Var}(N) = 0.144097 - 0.125^2 = 0.128472$$

As expected, the variance is greater than the mean for a mixture. Using the normal approximation for 100 policyholders, we have

$$100E[N] + 1.645\sqrt{100\,\text{Var}(N)} = 12.5 + 16.45\sqrt{0.128472} = 18.3962$$

Since we need at least 95% probability of having *less than* x claims, we set $x =$ **19**.

[4/6/2008] On page 527, in the table for Example 32E, replace x in the first cell with t.

[4/3/2008] On page 805, the solution to Quiz 52-2 is incorrect. The correct solution is

For the process with 1's, there is no variance since we are told the exact value. For the other two processes, the variance equals the mean. All processes are independent. If N_5 is the number of 5's and N_{10} the number of 10's, then the variance of the value of the coins is

$$\text{Var}(5N_5 + 10N_{10}) = 5^2\,\text{Var}(N_5) + 10^2\,\text{Var}(N_{10}) = 3(25) + 3(100) = \mathbf{375}$$

[4/2/2008] On page 497, in the solution to exercise 30.13, on the last line, replace 0.961530 with 0.956320.

[3/31/2008] On page 653, in the solution to exercise 41.3, on the first, second, and fourth displayed lines, the right subscript of p should be 40 instead of 0.

[3/26/2008] On page 140, the reference in exercise 9.12 should be to 3-F00:10.

[3/26/2008] On page 700, in the first displayed line of the solution to exercise 44.10, put 50,0000 in front of $e^{-2.4t}$ in the last integral.

[3/19/2008] On page 468, in the solution to exercise 28.24, on the third line, change $\frac{1}{0.8}$ to $\frac{1}{0.08}$.

[3/16/2008] On page 600, in the solution to exercise 37.7, on the third line, replace $\ddot{a}_x$ with $\ddot{a}_z$. z refers to an arbitrary life with constant force of mortality μ. On the next line, put a t in the exponent in the sum: $e^{(-0.08-\mu)t}$.

[2/27/2008] On page 812, the last two lines of the solution to exercise 53.4 are incorrect, because the second moment of an exponential is twice the square of the mean. The correct lines are

$$E[X^2] = 0.75(2(5^2)) + 0.25(2(15^2)) = 150$$
$$\text{Var}(X) = 150 - 7.5^2 = \boxed{\mathbf{93.75}}$$

[2/20/2008] On page 146, in the solution to exercise 9.3, on the first line of the page, replace the t in the denominator with u.

[2/18/2008] On page 319, in the solution to exercise 18.23, on the first displayed line, replace $Ap2_{40}$ with ${}^2A_{40}$.

[2/16/2008] On page 116, delete the second sentence in the fourth paragraph, "In fact…" *Models for Quantifying Risk* covers this topic in the second edition.

[2/13/2008] On page 797, in the answer to Example 52F, replace the displayed line with

$$\int_2^{10} 50\left(0.8 - 0.1e^{-t}\right)\mathrm{d}t = 40(10-2) + 5e^{-t}\Big|_2^{10} = 320 + 5\left(e^{-10} - e^{-2}\right) = \boxed{\mathbf{319.3236}}$$

[2/13/2008] On page 797, on the line after Example 52F, delete the word "this".

[2/13/2008] On page 807, in Example 53A, on the last line delete the word "no" and on the second line of the answer delete the word "no". Also on the last line, change "events" to "event".

[2/13/2008] On pages 808–809, in the answer to Example 53C, change all 8 ">"s to "≥".

[2/11/2008] On page 83, SOA M-F06:16,17 should not be in the list of released exam questions relevant to this lesson. Add SOA M-S05:21 to the list.

[2/11/2008] On page 253, delete the additional released exam question SOA M-S05:21.

[2/10/2008] On page 814, the solution to exercise 53.9 is incorrect. The correct solution is

For 10 days, the Poisson rate is 10λ, which has mean $10(0.2) = 2$ and variance $10^2(0.1) = 10$. A gamma distribution with this mean and variance has $\alpha\theta = 2$ and $\alpha\theta^2 = 10$, making $\theta = 5$ and $\alpha = 0.4$. The corresponding negative binomial distribution has $r = 0.4$ and $\beta = 5$. The probability of at least 2 applications is

$$1 - p_0 - p_1 = 1 - \left(\frac{1}{6}\right)^{0.4} - 0.4\left(\frac{1}{6}\right)^{0.4}\left(\frac{5}{6}\right) = 1 - 0.488359 - 0.162786 = \boxed{\mathbf{0.3489}}$$

[2/9/2008] On page 790, the solution to Example 51B is incorrect. Replace the part of the solution on page 790 (from the top) with the following. In the following, for convenience, the last 2 lines of page 789 (which are

unchanged) are also given

$$\begin{aligned} E[T] &= \int_0^\infty e^{-\int_0^u 0.1t\,dt} du \\ &= \int_0^\infty e^{-0.1u^2/2} \\ &= \int_0^\infty e^{-u^2/(2\sqrt{10}^2)} du \end{aligned}$$

This is the integrand of a normal distribution function with $\mu = 0$, $\sigma = \sqrt{10}$, except that it is missing the constant $\frac{1}{\sigma\sqrt{2\pi}}$. Therefore, it is equal to $\sigma\sqrt{2\pi}[1 - \Phi(0)]$, and we have

$$E[T] = \sigma\sqrt{2\pi}[1 - \Phi(0)] = \sqrt{10}\sqrt{2\pi}(0.5) = \boxed{\mathbf{3.963}}$$

[2/9/2008] On page 791, on the first line of the solution to Example 51F, replace "fifth" with "ninth".

[2/6/2008] On page 147, in the solution to exercise 9.8, 7 lines from the end, replace "Since $l_{74} - l_{[71]+1}$" with "Since $l_{[71]+1} - l_{74}$".

[2/4/2008] On page 177, on the last line of subsubsection 11.3.2, delete "in the passage labeled 51".

[2/3/2008] On page 124, the answer choices for exercise 8.39 are missing. They are

(A) 0.090 (B) 0.097 (C) 0.104 (D) 0.111 (E) 0.118

[2/2/2008] On page 463, in the solution to exercise 28.1, put bars on $A^1_{30:\overline{10|}}$ on the first and second lines, and ${}_{10}k_{30}$ on the last line.

[1/31/2008] On page 126, in the solution to exercise 8.5, on the second displayed line, replace 4,630,360 with 4,530,360.

[1/28/2008] On page 125, add SOA M-F06:16 to the list of released exam questions.

[1/28/2008] On page 571, add SOA M-F06:17 to the list of released exam questions.

[1/28/2008] On page 1009, SOA Fall 2006 question 16 is 8 and question 17 is 35.

[1/26/2008] On page 379, in exercise 22.29(vi), change "live" to "life".

[1/24/2008] On page 383, in the solution to exercise 22.2, 6 lines from the end, an annuity symbol is missing; it should read

$$\ddot{a}_{35:\overline{15|}} = \ddot{a}_{35} - {}_{15}E_{35}\,\ddot{a}_{50}$$

[1/21/2008] On page 196, in the solution to exercise 11.28, on the second line, replace the first ${}_np_x$ with ${}_nq_x$.

[1/19/2008] On page 65, 3 lines before the exercises, put a right parenthesis after $\tau > 1$.

[1/19/2008] On page 72, on the second line after equation (6.5), replace $\omega/2$ with $\frac{\omega - x}{2}$.

[1/19/2008] On page 301, in the solution to exercise 17.44, on the third line, change "begin" to "being".

[1/19/2008] On page 1008, in the solution to question 40, on the 4th line, change "begin" to "being".

[12/26/2007] On page 43, in the solution to exercise 3.6, the second denominator of the last line is incorrect. The last line should read

$$\left(\frac{9{,}471{,}591 - 9{,}455{,}522}{9{,}617{,}802}\right)\left(\frac{8{,}563{,}435}{9{,}607{,}896}\right) = \boxed{\mathbf{0.001489}} \qquad \mathbf{(C)}$$

[12/26/2007] On page 102, in the solution to exercise 7.6, on the 3rd and last lines, replace 10.192 with 10.1933. 4 lines from the end, p'_x should be p'_{25}. On the last line, the final answer is 0.8047 instead of 0.8034.

[12/9/2007] On page 607, the first sentence on the page is no longer entirely true. The concept of which of two Poisson processes occurs first is mentioned indirectly in the Daniel study note on Poisson processes (which is on both the MLC and 3L syllabi) and discussed in Example 54E.

[3/27/1980] On page 587, on the last line of the solution to exercise 36.20, put a bar over $A_{55:55}$: $\bar{A}_{55:55}$.