

Errata and updates for ASM Exam MFE/3F (Fourth Edition) sorted by page

The following practice exam questions are defective in that none of the 5 answer choices is correct: 2:6,12; 6:4,5,17. Also, questions 5:14, 6:8, 7:15, 8:5, 8:20, 10:7, 10:19 are corrected below. Practice exam 4 question 2 is defective and is not easily repaired.

- [7/2/2009] On page x, on the third line of the first paragraph of “Rounding Rules with the normal distribution”, change 0.8859 to 0.8860.
- [6/22/2008] On page 3, on the second line of the paragraph beginning “**Forwards on a stock index with continuous dividends**”, change “begin” to “being”.
- [10/17/2008] On page 5 in footnote 2, at the end of the first line, change “the” to “they”.
- [3/4/2009] On page 7, on the second line from the bottom, replace “below K_1 or above K_3 ” with “below K_3 or above K_1 ”.
- [6/3/2009] On page 8, the first sentence of the second paragraph under “Collars” is a little unclear, and should be replaced by:

A collar’s payoff increases as the price of the underlying stock decreases below K_2 and decreases as the price of the underlying stock increases above K_1 . Between K_2 and K_1 , the payoff is flat.

- [10/17/2008] On page 10, 2 lines above Table 1.2, change $F_{0,T}$ to $F_{t,T}$.
- [8/11/2008] On page 18, the final answer to exercise 1.1 should be **1.647**.
- [9/6/2008] On page 28, in the third paragraph of Section 2.3, in the first sentence, change the last word “decreases” to “increases”. In the fourth sentence, change “decreasing time to expiry” to “increasing time to expiry”.
- [4/29/2009] On page 36, on the fourth line of Subsection 2.4.2, replace the word “stock” with “strike”.
- [6/22/2008] On pages 40–41, the solution to exercise 2.8 ignores the fact that the stock price cannot go below 0. A revised solution taking this into account goes as follows:

Let x be the number of 65-strike puts to sell and y the number of 75-strike puts to buy. To have no loss initially, we need the proceeds from the 65-strike puts (12 for each put sold) to exceed the cost of the 50-strike puts (5 for each of the 10 purchased) plus the cost of the 70-strike puts (15 for each put purchased), or

$$\begin{aligned} 12x &\geq 10(5) + 15y \\ 12x - 15y &\geq 50 \end{aligned}$$

If the 65-strike puts are exercised, we can exercise the 75-strike puts simultaneously. To have no loss if the 65-strike puts are exercised when the stock price is between 50 and 65 (50 being the worst case), we need the gain on y 75-strike puts to exceed the payment on x 65-strike puts (since the 50-strike puts may end up being worthless), or

$$\begin{aligned} x(65 - 50) &\leq y(75 - 50) \\ x &\leq \frac{5}{3}y \end{aligned}$$

To have no loss if the 65-strike puts are exercised when the stock price is less than 50, the worst possible case is if the stock price is 0. (We assume the stock price cannot be negative.) Then the gain on ten 50-strike

puts and y 75-strike puts must exceed the gain on x 65-strike puts, or

$$\begin{aligned}50(10) + 75y &\geq 65x \\65x - 75y &\leq 500 \\13x - 15y &\leq 100\end{aligned}$$

The intersection of the first and second constraints is

$$\begin{aligned}12x - 15y &= 50 \\x &= \frac{5}{3}y \\12\left(\frac{5}{3}y\right) - 15y &= 50 \\5y &= 50 \\y &= 10 \\x &= \frac{5}{3}(10) = \frac{50}{3}\end{aligned}$$

The intersection of the first and third constraints is

$$\begin{aligned}12x - 15y &= 50 \\13x - 15y &= 100 \\x &= 50 \\y &= \frac{12(50) - 50}{15} = \frac{110}{3}\end{aligned}$$

The intersection of the second and third constraints (not needed to answer the exercise's question) is

$$\begin{aligned}x &= \frac{5}{3}y \\13x - 15y &= 100 \\ \frac{65}{3}y - 15y &= 100 \\ \frac{20}{3}y &= 100 \\y &= 15 \\x &= \frac{5}{3}(15) = 25\end{aligned}$$

Figure 1 shows the area of possible (x, y) . Thus $\boxed{50/3 \leq x \leq 50}$.

[1/7/2009] On page 41, in the solution to exercise 2.11, change $C(50, 40, 0.5)$ to $C(50, 48, 0.5)$.

[9/15/2008] On page 51, on the second and third lines, change 156.25 to -156.25 .

[10/29/2008] On page 60, in the solution to exercise 3.9, on the last 2 lines, put a negative sign in front of 0.00517409 (in two places) and in front of the final answer 0.2587.

[9/6/2008] On page 65, 3 lines from the end of the solution to exercise 3.27, replace $100 - 200/7$ with $110 - 200/7$.

[9/14/2008] On page 66, in the solution to Quiz 3-1, on the first line, change the second "down" to "up".

[8/26/2009] On page 74, on the first line, remove one of the two equal signs after F_u .

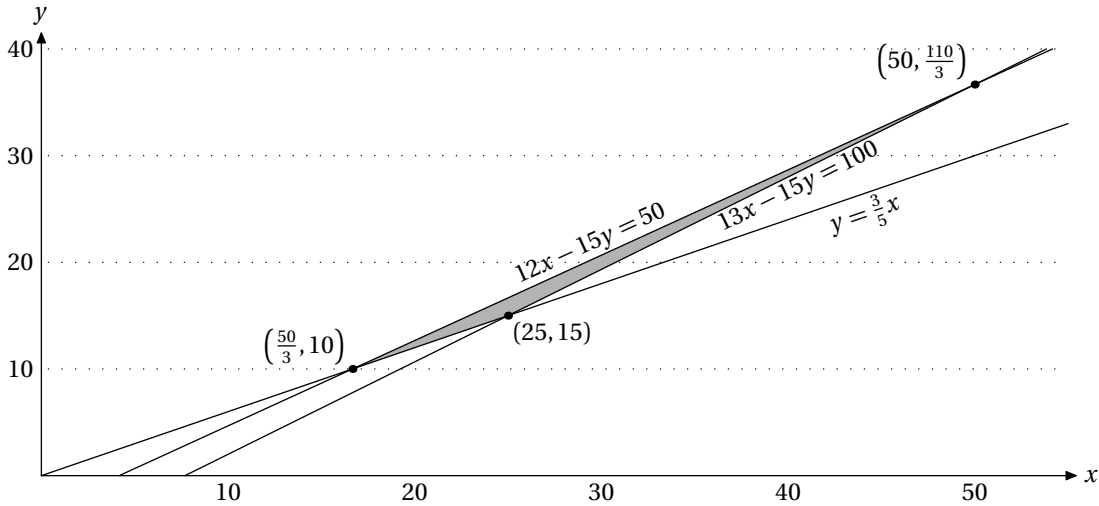


Figure 1: Values of (x, y) demonstrating arbitrage in exercise 2.8

[7/28/2009] On page 76, in exercise 4.1, on the first line, delete “based on forward rates,”.

[8/4/2008] On page 83, on the last line of the page, change 0.01 in the exponent to 0.03.

[7/14/2008] On page 105, the solution to exercise 5.10 is incorrect. The correct displayed lines should be:

$$C = 25e^{-0.02} - 10e^{-0.05} = 14.99267$$

$$Ce^{\gamma} = 25e^{-0.02}e^{0.15} - 10 = 18.47071$$

$$\gamma = \ln \frac{18.47071}{14.99267} = \boxed{0.2086}$$

[9/6/2008] On page 110, on the last line of the solution to Example 6B, replace 0.29538 with 0.29536.

[9/6/2009] On page 113, on the line “Additional released exam questions”, change “Sample:6” to “Sample:17”.

[10/5/2008] On page 116, on the first line, change 6 to 7.

[9/6/2008] On page 120, in Quiz 7-3, change (iv) to

The observed annual volatility of the stock price is 0.2.

[8/14/2008] On page 139, in the solution to exercise 8.8, on the third displayed line, change $\sqrt{0.25}$ in the denominator to $\sqrt{0.5}$

[8/18/2009] On page 140, the solution to exercise 8.12 is correct. Ignore a previous erratum posted for this exercise.

[3/18/2009] On page 149, replace the fourth word of the page “if” with “it”.

[4/5/2009] On page 149, on the third displayed line before the end of Subsection 9.1.1, the line for d_2 , change $(0.2)(0.25)$ to $0.2\sqrt{0.25}$.

[4/26/2009] On pages 154–155, in the sentence starting on page 154 and ending on page 155, change “there is a graph of a put option even more out of the money” to “there is a graph of a put option even more in the money”.

[3/19/2009] On page 157, on the line before the displayed equation, change ρ to r .

[9/26/2008] On page 163, on the second line from the bottom, delete the first “is very small”.

- [9/20/2008] On page 164, on the second line from the end of the answer to Example 9C, delete e from $e^{-0.0968}$.
- [1/23/2010] On page 171, although the solution given to exercise 9.19 is mechanically correct, the information given is impossible, since delta for a put option should decrease, not increase, as an option is more in-the-money.
- [10/11/2008] On page 173, in the solution to exercise 9.3, on the 4th displayed line change 0.0253 to 0.03 and on the 5th displayed line change 0.00253 to 0.003.
- [9/26/2008] On page 173, in the solution to exercise 9.4, on the last line, change 0.1028 to 0.10.
- [5/21/2009] On page 174, in the solution to exercise 9.14, on the second line, there should be a minus line at the start of the line, before 0.3053.
- [10/11/2008] On page 184, 4 lines from the bottom, change $d_2 -$ to $d_2 =$.
- [3/8/2009] On page 189, in the solution to exercise 10.1, on the last displayed line, replace 0.06 in the exponent with 0.0605. On the last two lines, change 3.309 to 3.3114. Change the final answer to -0.160 .
- [2/3/2009] On page 191, in the solution to exercise 10.7, on the third non-displayed line, delete one of the two “is”s.
- [6/22/2008] On page 197, on the 4th line of the paragraph starting with “3.”, replace 0.2456 with -0.2456 .
- [4/5/2009] On page 199, on the third and fourth lines of the page, change 3, which appears in two places, to 12.
- [8/15/2009] On page 212, in the solution to exercise 11.3, on the fourth line of the page, change $-N(d_1)$ to $-N(-d_1)$.
- [4/26/2009] On page 213, in the solution to exercise 11.14, on the first displayed line, change $+\theta h$ on the left-hand side to $-\theta h$. On the last displayed line, change the last denominator 3.65 to 365.
- [4/12/2009] On page 215, in the solution to exercise 11.22, on the fifth displayed line, change 0.301 to 0.0301.
- [3/16/2009] On page 227, in the first paragraph of Subsection 12.3.2, add the word “early” at the end of the third sentence and after words “call option” in the fourth sentence.
- [10/22/2008] On page 229, on the last line of parts 3 and 4 of the answer to Example 12G, replace $C(S, 40, 0.06, 0.4, 0)$ with $C(S, 45, 0.06, 0.4, 0)$.
- [12/6/2008] On page 236, in the solution to exercise 12.6, replace the third sentence with “The payoff is the final value minus the average of the 2 end-of-period values, but not less than 0.”
- [9/24/2009] On page 238, in the solution to exercise 12.19, on the second to last line, replace $60 - 50 = 10$ with $0.6 - 0.5 = 0.1$.
- [4/29/2009] On pages 240–241, in the solution to exercise 12.25, on the first line and on the last displayed line (page 241), change Ke^{-rT} to Ke^{-rt} .
- [12/14/2009] On page 243, paragraphs 3 and 4: McDonald defines a cash-or-nothing option as one that pays 1 if the condition is satisfied. If an option paid c , it would be considered c cash-or-nothing options.
- [8/17/2008] On page 244, on the third line of the second paragraph, change $1.5 = \frac{1}{3}(0.5)$ to $\frac{1}{3}(1.5) = 0.5$.
- [4/7/2009] On page 244, on the second to last line of numbered paragraph 1, change $S_0e^{(r-\delta)t}$ to $S_0e^{(r-\delta)T}$.
- [9/19/2008] On page 245, on the second displayed line of the answer, change $\ln(105/80)$ to $\ln(100/105)$. On the third displayed line change $N(-0.19)$ to $N(-0.11)$.
- [12/6/2008] On page 246, on the 4th displayed line, change $-d_1^2$ in the second exponent to $-d_i^2$. Also, delete one of the $\sqrt{2\pi}$ s from the denominators, e.g.,

$$= \frac{e^{-d_i^2/2}}{\sqrt{2\pi}} \left(\frac{1}{S\sigma\sqrt{T}} \right)$$

- [2/20/2009] On the third line of page 249, replace “of” with “are”.
- [6/13/2009] On page 251, in the answer to Example 13D part 2, in the parentheses, change -0.2646 to -0.26406 .
- [9/26/2008] On page 253, in the final line of the answer to Example 13E, replace 0.031628 with 0.033737 and replace the final answer 0.5255 with 0.5055 .
- [11/16/2008] On page 255, in the second sentence, add the word “positive” before “multiplicative”.
- [10/26/2008] On page 255, the answer to Example 13G should be accumulated to the end of the year at the risk-free rate: $86,240e^{0.04} = \boxed{89,760}$.
- [10/8/2009] On page 257, on the fourth line of the solution to Example 13H, change $e^{0.06(0.75)}$ to $e^{-0.06(0.75)}$. On the second to last line of the solution to Example 14G, change $P(S, 50e^{0.02}, 0.25)$ to $P(S, 50e^{-0.02}, 0.25)$.
- [8/19/2009] On page 265, in the solution to exercise 13.2, on the fourth line, change $c | S < c$ to $c | S < K$.
- [8/15/2008] On page 265, the solution to exercise 13.2 is incorrect starting with the last 3 lines of the page. From that point on, the solution should read:

$$d_2(5) = \frac{\ln(28/5) + 0.06 - 0.02 - 0.5(0.3^2)}{0.3} = 5.7259 \quad N(-d_2(5)) = 0$$

$$d_2(15) = \frac{\ln(28/15) + 0.06 - 0.02 - 0.5(0.3^2)}{0.3} = 2.0638 \quad N(-d_2(15)) = N(-2.06) = 0.0197$$

$$d_2(25) = \frac{\ln(28/25) + 0.06 - 0.02 - 0.5(0.3^2)}{0.3} = 0.3611 \quad N(-d_2(25)) = N(-0.36) = 0.3594$$

The value of the option is

$$e^{-0.06}[10(0.3594 - 0.0197) + 20(0.0197 - 0)] = e^{-0.06}(3.791) = \boxed{3.570}$$

- [9/17/2008] On page 267, in the solution to exercise 13.12, on the last line of the page, replace 0.4 in the numerator with 0.1 .
- [9/6/2008] On page 268, in the solution to exercise 13.12, on the 4th line of the page, replace $150e^{-0.4}$ with $120e^{-0.4}$.
- [9/6/2008] On pages 269–270, there are several errors in the solution to exercise 13.19: ignoring dividends, failing to discount 50 . Starting with the line after “Let’s calculate the option values.”, the correct solution is:

$$d_1 = \frac{0.04 - 0.02 + 0.5(0.4^2)}{0.4} = 0.25$$

$$N(d_1) = N(0.25) = 0.5987$$

$$d_2 = 0.25 - 0.4 = -0.15$$

$$N(d_2) = N(-0.15) = 0.4404$$

$$C(S, 50, 1) = 50e^{-0.02}(0.5987) - 50e^{-0.04}(0.4404) = 8.186$$

We can calculate the put using Black-Scholes or by put-call parity.

$$P(S, 50, 1) = C(S, 50, 1) + Ke^{-r} - Se^{-\delta} = 8.186 + 50e^{-0.04} - 50e^{-0.02} = 7.215$$

We want $50e^{-0.04} + 8.186 = c(50e^{-0.04} - 7.215)$, so $c = \frac{56.225}{40.824} = \boxed{1.377}$.

- [2/15/2009] On page 270, in the solution to exercise 13.20, replace all three $(100, 100, 0.75)$ ’s with $(95, 100, 0.75)$.
- [9/21/2008] On page 271, the solution to exercise 13.23 is correct (unlike what I reported previously). Since the forward price of the stock is given, it is discounted at r . ($\delta = 0$)

[9/21/2008] On page 271, there are two errors in the solution to exercise 13.24. On the third displayed line, $e^{-0.01}(0.2912)$ should be multiplied by 1.05. On the following line, the first expression should be $e^{-0.5(0.02)}$. The corrected solution starting with the third displayed line is

$$C(S_{1/2}, 1.05S_{1/2}, 0.5) = S \left[e^{-0.04}(0.3520) - 1.05e^{-0.01}(0.2912) \right] = 0.03548S_{1/2}$$

Since the forward price of S is 100, the prepaid forward price is $100e^{-0.5r} = 100e^{-0.5(0.02)}$, and the answer is $0.03548(100e^{-0.01}) = \boxed{3.52}$.

[8/17/2008] On page 271, in the solution to Quiz 13-1, on the second line, reverse the two inequalities at the end of the line: $(70 | S < 60) - (S | S < 60)$.

[7/29/2009] On page 274, on the last line, the left hand side should be $X(t) - X(0)$.

[10/11/2008] On page 275, on the second displayed line, change the denominator to dx^2 .

[9/6/2008] On page 279, on the second line of the answer to Example 14G, an $X(0)$ is missing, and the line should read

$$\frac{\partial X}{\partial Z} = \sigma X(0)e^{(\alpha-0.5\sigma^2)t+\sigma Z(t)} = \sigma X(t)$$

[10/25/2008] On page 280, on the first displayed line in the solution to Example 14I, change the second denominator to ∂Z^2 .

[9/28/2008] On page 284, in the second displayed line, replace $\alpha(r(t))$ with $r(t)$.

[10/18/2008] On page 284, in Example 14M, replace the 2 denominators dt in (i) and (ii) with $X(t)$

[9/28/2008] On page 286, two lines below formula (14.9), a T is missing in the exponent: $C(0)e^{[a(\alpha-\delta)+0.5a(a-1)\sigma^2]T}$.

[9/21/2009] On page 286, two lines above equation (14.10), change $\alpha - \delta$ to $\alpha - r$.

[5/20/2009] On page 287, on the last line of the $a = 1$ paragraph, change $e^{-\delta t}$ to $S(0)e^{-\delta T}$.

[5/1/2009] On page 291, in Table 14.1, in the second bullet, change the $X(0)$ inside the parentheses to $\ln X(0)$.

[11/1/2009] On page 295, in exercise 14.24, change the second-to-last line to “The risk-neutral process for $S(t)$ is

$$\frac{dS(t)}{S(t)} = a dt + b d\tilde{Z}(t)$$

[10/25/2008] On page 299, on the first line of the solution to exercise 14.9, replace 0.02 with 0.2.

[10/25/2008] On page 301, in the solution to exercise 14.21, on the first line, replace $0.1Z(t)$ with $\sigma Z(t)$ in the exponent.

[10/25/2008] On page 302, in the solution to exercise 14.25, on the first line, the first bracketed expression should be $S(T)$ rather than $S(t)$. McDonald uses this notation for a forward on a stock, although the T is redundant. The second $S(t)$ is still correct. On the next 3 lines, change $S(t)$ to $S(0)$, once on each line.

[11/3/2008] On page 306, on the third line, replace $(2\sigma^2)$ with $(2\sigma)^2$.

[9/26/2008] On page 308, in the solution to Quiz 14-9, on the third line, replace 0.25 with 0.025.

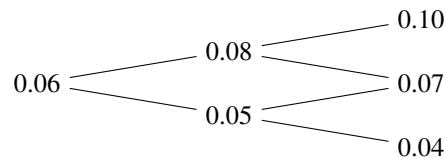
[9/2/2009] On page 314, lines 4–2 from the bottom, the definition of σ_i is inconsistent with McDonald. Replace these three lines with

This ratio is equal to $e^{2\sigma_i \sqrt{h}}$ in column i , where h is the amount of time since the start. σ_i is the annualized lognormal yield volatility of time i yields, which is not the same as the volatilities in Table 15.1 which are

volatilities of $n - 1$ -year yields in year 1, unless the period is one year and $n - 1 = 1$, in which case the volatility of 1-year yields at year 1 is σ_1 .

[5/4/2009] On page 316, on the fifth line, change “2-year bonds” to “3-year bonds”.

[9/7/2008] On page 321, in exercise 15.7, the binomial tree should look like this:



[10/4/2009] On page 332, two lines from the bottom, insert “=” between $N(-0.01)$ and 0.4960.

[9/26/2008] On page 336, in the solution to exercise 16.7, on the third line from the end, replace $N(0.07)$ with $N(0.08)$.

[10/29/2008] On page 342, equation (17.7) should read

$$I = NP(r, t, T_1) + P(r, t, T_2) + W = 0$$

The second displayed line should read

$$V = NP(r, t, T_1) + P(r, t, T_2)$$

[9/28/2008] On page 343, on the first and second displayed lines, add another right parenthesis before the right bracket on each line. Three lines from the bottom of the page, reverse the left-hand side so that the line becomes

$$0.5[0.08 - r(t)] - 0.8[0.05 - r(t)] = \phi(r, t)(0.3)$$

[9/28/2008] On page 347, the solution to Example 17D is incorrect. The correct solution is

We will use equation (17.16), since $\frac{\partial \ln P(r, t, T)}{\partial t} = \frac{P_t}{P}$. By subtracting the drift of the original process from the drift of the risk-neutral process, we get $\sigma\phi = 0.008$. Also,

$$B(0, 2) = \frac{1 - e^{-0.2(2)}}{0.2} = 1.64840$$

Then by equation (17.16),

$$\begin{aligned} \frac{\partial \ln P(r, t, T)}{\partial t} &= -\frac{B^2\sigma^2}{2} + B[a(b - r) + \sigma\phi] + r \\ &= -\frac{(1.64840^2)(0.1^2)}{2} + 1.64840[0.2(0.06 - 0.05) + 0.008] + 0.05 \\ &= -0.013586 + 0.016484 + 0.05 = \boxed{0.052898} \end{aligned}$$

[10/15/2009] On page 348, on the first displayed line, replace σ^2 with $\bar{\sigma}^2 r$.

[10/4/2008] On page 353, the final answer to Example 17I should be 0.10036.

[2/3/2009] On page 354, one line above Example 17J, replace “does not vary with t or T ” with “varies only with $T - t$, not with t or T individually.”

- [8/30/2009] On page 355, Example 17L requires knowledge of the formula for an infinitely-lived bond under Vasicek. Note that the sample questions require knowledge of the formula for an infinitely-lived bond under CIR.
- [9/28/2008] On page 355, in the first sentence of “Questions on simple subformulas”, change $b - \sigma\phi/a$ to $b + \sigma\phi/a$.
- [2/14/2009] On page 360, in exercises 17.11, 17.12, and 17.14, dz and dZ are the same Brownian motion.
- [9/28/2008] Pages 361, 362, 367: General comment on exercises 17.17, 17.18, 17.28, 17.30: The McDonald textbook uses σ for the volatility parameter of the CIR model, and I usually use $\bar{\sigma}$, but occasionally in these exercises or their solutions I use σ . You should be aware that σ is the name that will be used on the exam. The volatility of the interest rate process in the CIR model is not σ but $\sigma\sqrt{r}$.
- [9/30/2009] On page 362, the information for exercises 17.22–17.23 should also be used for exercise 17.24.
- [10/5/2009] On page 364, in the solution to exercise 17.9, on the second displayed line, put a – before $5y$.
- [4/7/2009] On page 365, in the solution to exercise 17.13, on the fourth non-display line, change “by σa ” to “by a/σ ”.
- [9/28/2008] On page 367, the final solution to exercise 17.17 should be -0.1 (although a negative Sharpe ratio is unusual).
- [10/5/2009] On page 367, in the solution to exercise 17.21, on the fourth displayed line, replace $P(0.06, 0, 10)$ in the denominator with $P(0.06, 0, 2)$.
- [4/12/2009] On page 371, in the solution to Quiz 17-3, on the fourth line, delete the word “not”.
- [9/28/2008] On page 372, in the solution to quiz 17-7, on the last displayed line, put a minus sign in front of the second fraction $\frac{597(1.83583)}{336(1.98652)}$.
- [4/19/2009] On page 382, in question 5, in statement (i), change $S^{-1}(1)$ to $S(1)^{-1}$. In statement (ii) change $S^2(1)$ to $S(2)^2$. On the fourth line, change $F_{0,3}(3)(S^{0.5})$ to $F_{0,3}(S(3)^{0.5})$.
- [10/25/2008] On page 382, change the 5 choices for question 6 to
- (A) $-0.4(r(t) - 0.08375)$
 (B) $-0.4(r(t) - 0.10625)$
 (C) $-0.4(r(t) - 0.11875)$
 (D) $-0.8(r(t) - 0.08375)$
 (E) $-0.8(r(t) - 0.10625)$
- [10/31/2009] On page 393, question 2 is defective and should be deleted.
- [11/2/2008] On page 402, in question 14, change the 5 choices to
- (A) 31 (B) 32 (C) 33 (D) 58 (E) 60
- [11/22/2008] On page 403, in question 18, the 5 numbers after σ are intended to be the five answer choices:
- (A) 0.12 (B) 0.16 (C) 0.20 (D) 0.24 (E) 0.28
- [10/25/2008] On page 406, in question 5, on the first line after the table, change 0.10 to 0.09. 2 lines further down, add “Both options expire in one year.”
- [9/14/2008] On page 407, in question 8, change 0.15 in (ii) to 0.20 and change 0.20 in (iv) to 0.10.
- [11/2/2008] On page 415, the last line of question 15 by adding the words “risk-neutral” before “probability”.
- [10/26/2008] On page 418, in question 5, change the last word “buys” to “sells”.

[4/2/2009] On page 418, in question 6, change (iii) to “The continuously compounded dividend rate is 0.02.”

[5/4/2009] On page 421, in question 16, the first two displayed lines should be

$$\frac{F_{0,T}(S(T)^2)}{S(0)^2} = 1.15315$$

$$\frac{F_{0,T}(S(T)^3)}{S(0)^3} = 1.28082$$

[10/26/2008] On page 422, in question 19, on the last line, replace “expresses” with “expressed”.

[10/17/2008] On page 422, in the table for question 20, change “ t -year forward price” on the second line to “ $t - 1$ -year forward price”.

[5/13/2009] On page 430, in question 7, on the last line of the question, change 6-month to 9-month.

[5/5/2009] On page 433, in question 15, on the first line, change “a stock” to “a nondividend paying stock”.

[11/1/2009] On page 434, in question 19, change “futures” to “forward” in the three places the word appears. This question assumes that there are no mark-to-market adjustments on the contract. The forward contract is only settled at its expiry.

[4/19/2009] On page 450, in the solution to question 5, on the first line, change “(ii) and (iii)” to “(i) and (ii)”. On the second-to-last line, change $S^{0.5}$ in the numerator to $S(3)^{0.5}$.

[10/25/2008] On page 450, change the last line of the solution to question 6 to

$$= \boxed{-0.8(r(t) - 0.08375)} \quad (\text{D})$$

Also change the answer key correspondingly.

[9/6/2008] On page 452, the solution to question 12 is incorrect because d_2 is calculated incorrectly and also the last line’s arithmetic is incorrect. The correct last 5 lines are:

$$d_1 = \frac{\ln(100/98.0298) + [-0.02 + 0.5(0.24083^2)](0.5)}{0.24083 \sqrt{0.5}} = 0.1433$$

$$d_2 = 0.1433 - 0.24083 \sqrt{0.5} = -0.0270$$

$$N(d_1) = N(0.14) = 0.5557$$

$$N(d_2) = N(-0.03) = 0.4880$$

$$C = 100e^{-0.02(0.5)}(0.5557) - 98.0298(0.4880) = \boxed{7.179}$$

[10/11/2008] On page 468, in the solution to question 18, on the 8th and 10th lines, replace 600 with 650.

[11/2/2008] On page 474, in the solution to question 14, the last line should be

$$\text{The answer is } 1000[1.03(0.03177)] = \boxed{32.7}. \quad (\text{C})$$

[10/15/2009] On page 475, replace the first three words of the solution to question 19 with “The factors for”.

[5/11/2009] On page 476, in the answer key, the answer to 2 should be E.

[10/17/2009] On page 480, in the solution to question 12, on the first displayed line on the page, change the exponent on e from $(r - \delta)$ to $(r - \delta)h$.

[10/13/2008] On page 480, in the solution to question 14, change $P(45, 50, 4)$ to $P(45, 50, 1)$ on the second displayed line. On the last line, change $P(S, 45, 4)$ to $P(S, 45, 1)$. Also, on the last 5 lines, every 45 should be changed to 50.

[10/17/2008] On page 481, in the solution to question 17, change the last sentence to

Thus the stock price after 3 months is normal with $\mu = 0.055(0.25) = 0.01375$ and $\sigma = 0.3\sqrt{0.25} = 0.15$, so the probability that the change in stock price is less than 0 is

$$N\left(\frac{-0.01375}{0.15}\right) = N(-0.09) = \boxed{0.4641}$$

[5/13/2009] On page 484, in the solution to question 3, on the third displayed line, change the left hand side to e^{-3rs} .

[11/2/2008] On page 485, in the solution to question 7, on the second line, change 40-strike to 60-strike.

[11/2/2008] On page 488, in the solution to question 15, on the second line, add the words “risk-neutral” before probability. On the ninth line, add the words “risk-neutral” before “probabilities”.

[10/20/2009] On page 492, in the solution to question 5, on the first line, change $a = 0.06$ to $a = 0.4$.

[10/26/2008] On pages 492–493, in the solution to question 5, on the 5th line from the bottom of the page, change “sell” to “buy”. On the last line of the solution, change “bought” to “sold” and delete the parenthetical remark.

[10/26/2008] On pages 495–496, the solution to question 13 is incorrect. After the first 3 lines, the solution should be:

The payment is

- 0 if $S(1) \leq 90$
- $S(1)$ if $90 < S(1) < 100$
- 100 if $S(1) \geq 100$

Accordingly, the payment’s value in terms of binary options is

$$(S | S > 90) - (S | S > 100) + (100 | S > 100)$$

Let’s evaluate the values of these three options.

$$d_1(90) = \frac{\ln(100/90) + 0.055 + 0.5(0.3^2)}{0.3} = 0.6845$$

$$N(d_1(90)) = N(0.68) = 0.7517$$

$$(S | S > 90) = S e^{-\delta} N(d_1(90)) = 100(0.7517) = \mathbf{75.17}$$

$$d_1(100) = \frac{0.055 + 0.5(0.3^2)}{0.3} = 0.3333$$

$$N(d_1(100)) = N(0.33) = 0.6293$$

$$(S | S > 100) = S e^{-\delta} N(d_1(100)) = 100(0.6293) = \mathbf{62.93}$$

$$d_2(100) = 0.3333 - 0.3 = 0.0333$$

$$N(d_2(100)) = N(0.03) = 0.5120$$

$$(100 | S > 100) = 100e^{-r} N(d_2(100)) = 100e^{-0.055}(0.5120) = \mathbf{48.46}$$

The value of the payment is therefore $75.17 - 62.93 + 48.46 = \boxed{60.70}$. (E)

The answer key should be corrected accordingly.

[10/28/2008] On page 496, in the solution to question 14, on the third displayed line, change $\ln(42/41.5)$ to $\ln(41.5/42)$.

- [10/20/2009] On page 498, in the solution to question 20, on the first line, change $F_{0,1}[P(0, 2)]$ to $F_{0,1}[P(1, 2)]$.
- [10/26/2008] On page 513, in the solution to question 14, on the second and third displayed lines, change the exponent to $-d_1^2/2$.
- [4/27/2009] On page 513, in the solution to question 15, on the first displayed line, change $+ 0.5(0.3^2)$ in the numerator to $- 0.5(0.3^2)$.
- [10/26/2008] On page 515, in the solution to question 18, on the second line of the page, delete “3” at the beginning of the line.
- [5/14/2009] On page 517, in the solution to question 4, on the third displayed line on the page, delete 0.04 from the left-hand side denominator.
- [10/17/2009] On page 520, in the solution to question 15, on the first displayed line, $F_{0,1}(Q)$ should be $F_{0,1}^P(Q)$.
- [11/16/2008] On page 537, in the table, practice exam 6 questions 4 and 5 are based on lessons 8 and 3 respectively instead of 3 and 1.