

## Errata and Updates for ASM Exam MFE/3F (Seventh Edition Second Printing) Sorted by Date

[8/27/2010] On page 373, the first paragraph of exercise 6 is cut off and should end “14.23% probability of being in a negative cash position at the end of the year.”

[8/26/2010] On page 415, in the solution to exercise 17.4, on the second line, change  $\frac{dZ(t)}{dt}$  to  $\frac{dX(t)}{dt}$ .

[8/25/2010] Here is a revised version of Table 1, page x, incorporating the 76 sample questions.

Topic	Textbook chapters	Manual lessons	Number of questions				
			CAS		SOA		
			Spring 2007	Fall 2007	Sample questions	Spring 2007	Spring 2009
Put-call parity and related material	9	??-??	4	5	3	1	2
Binomial trees	10–11	??-??	4	4	8	4	3
Lognormal model	18	??-??	0	0	3	0	0
Black-Scholes	12	??-??	2	4	8	4	3
Delta hedging	13	??	2	1	4	2	1
Exotic options	14	??-??	1	3	12	2	2
Monte Carlo valuation	19	??	0	0	5	0	0
Itô processes	20–23	??-??	1	0	24	2	6
Interest rate models	24	??-??	2	0	9	3	3
Not on syllabus			0	0	0	1	0
<b>Total questions</b>			<b>16</b>	<b>17</b>	<b>76</b>	<b>19</b>	<b>20</b>

[8/24/2010] On page 369, the third line of Example 16E, and the non-display lines of the answer, all have errors. Here is a corrected version of the example and its answer:

**EXAMPLE 16E** You are given an Itô process of the form

$$dS(t) = 0.25S(t)dt + 0.10S(t)dZ(t)$$

Calculate the probability that  $S(t)$  is at least 5% higher than  $S(0)$

1. at time  $t = 0.1$
2. at time  $t = 1$

**ANSWER:** The Itô process is a geometric Brownian motion with  $\xi = 0.25$  and  $\sigma = 0.10$ . We calculate  $\mu = \xi - 0.5\sigma^2$  to obtain the  $\mu$  parameter of the corresponding arithmetic Brownian motion:

$$d\ln S(t) = (0.25 - 0.5(0.10^2))dt + 0.10dZ(t) = 0.245dt + 0.10dZ(t)$$

Then  $\Pr(S(t)/S(0) \geq 1.05) = \Pr(\ln S(t) - \ln S(0) > \ln 1.05)$ .

1. For  $t = 0.1$ ,  $m = (\mu)(0.1) = 0.0245$  and  $v = 0.10\sqrt{0.1}$

$$\Pr\left(\frac{S(1)}{S(0)} > \ln 1.05\right) = 1 - N\left(\frac{\ln 1.05 - 0.0245}{0.10\sqrt{0.1}}\right) = 1 - N(0.77) = 1 - 0.7794 = \boxed{0.2206}$$

2. For  $t = 1$ ,  $m = 0.245$  and  $\nu = 0.10$ , so

$$1 - N\left(\frac{\ln 1.05 - 0.245}{0.1}\right) = 1 - N(-1.96) = 1 - 0.0250 = \boxed{0.9750} \quad \square$$

[8/24/2010] On page 373, in exercise 8(ii), change  $S_0 - 40$  to  $S_0 = 40$ .

[8/24/2010] On page 377, in the solution to exercise 11, on the third line, change 0.02 (after an equals sign) to 0.04. On the fifth line, change  $e^{0.86}$  to  $e^{0.92}$ .

[8/23/2010] On page 360, in the solution to exercise 15.24, in the header of the table in the last column, change  $S_2 - 200$  to  $S_2 - 110$ .

[8/19/2010] On page 367, on the line above Section 16.2, change the 0.02 in the first exponent to 0.5.

[8/18/2010] On page 369, 4 lines from the bottom, change the left-hand side  $X(t)$  to  $dX(t)$ .

[8/13/2010] On page 235, in the solution to exercise 11.2, on the fifth line, remove the minus sign from  $-0.10$ .

[8/9/2010] On page 37, on the first line of the third bullet for the answer to Example 2D, change  $S_1 = 45 - k$  to  $S_1 = 40 + k$ .

[8/5/2010] On page 54, on the seventh line of the answer to Example 3A, change “(\*\*\*) from (\*)” to “(\*\*\*) from (\*\*)”.

[8/4/2010] On page 138, on the last line, the right parenthesis on the left side of the equation should be after  $\frac{150}{80}$ , and in the second expression, the right side should be  $\ln(15/8)$  ( $\ln$  is missing):  $\Pr\left(\frac{S_4}{S_0} > \frac{150}{80}\right) = \Pr\left(\ln(S_4/S_0) > \ln(15/8)\right)$ .

[8/4/2010] On page 141, change the left side of the last line of the answer to Example 7D to

$$\Pr(S_4/S_0 > 150/80)$$

In other words, change 8 to 80 and move the right parenthesis.

[8/2/2010] On page 138, 4 lines above Example 7B, put a square on  $\sigma$  in  $m = \mu t = \alpha t - 0.5\sigma t$  so that it is  $m = \mu t = \alpha t - 0.5\sigma^2 t$ .

[8/2/2010] On page 140, one line above Example 7D, replace  $(\alpha = 0.5\sigma^2)t$  with  $(\alpha - \delta - 0.5\sigma^2)t$ .

[7/26/2010] On page 685, in the solution to question 24, on the second displayed line, change  $-e^{-3r_f}$  to  $+e^{-3r_f}$ .

[7/22/2010] On page 359, the solution to exercise 15.17 is incorrect. The correct solution is

$X_1^* = \bar{X} + (Y - \bar{Y}) = \bar{X} + 45 - 50 = \bar{X} - 5$ . The Boyle  $\beta$  is  $\text{Cov}(X, Y)/\text{Var}(Y) = 450/600 = 0.75$ . Therefore,  $X_2^* = \bar{X} + 0.75(Y - \bar{Y}) = \bar{X} - 3.75$ . The difference is  $X_1^* - X_2^* = -5 + 3.75 = \boxed{-1.25}$ .

[7/19/2010] On page 13, on the last line of the page, change the first 1.02540 to 0.97539.

[7/18/2010] On page 92, in Figure 4.10, in the upper node in the second period (with stock price 130), replace 0 with 7.21181.

[7/12/2010] On page 268, in the solution to exercise 12.27:

- On the first and fourth displayed lines, replace 0.08 in the exponents with 0.02.
- Replace the last three lines with:

We want to solve  $e^{-0.005}(0.4207) + ce^{-0.02}(0.3446) = 0$ . Therefore

$$c = -\frac{e^{-0.005}(0.4207)}{e^{-0.02}(0.3446)} = -1.2393$$

and you need to buy **1.2393** 1-year put options.

[7/9/2010] On page 26, on the last line of the solution to Quiz 1-7, change 1.25 to 0.75 and 5.1132 to 4.5132.

[7/8/2010] On page 9, at the end of the first sentence (after “put”), add “both of them at-the-money ( $K = S_0$ ).”

[7/6/2010] On page 183, the solution to exercise 9.14 is incorrect. The correct solution is

We shall use formula (9.8). The one-year futures price of the stock is

$$F = S_0 e^{(r-\delta)t} = 40e^{0.06-0.02} = 41.6324$$

In the formulas for  $d_1$  and  $d_2$ , use  $t = 0.25$ , the period of the option.

$$d_1 = \frac{\ln(41.6324/45) + 0.5(0.3^2)(0.25)}{0.3\sqrt{0.25}} = -0.4436 \quad N(-d_1) = N(0.44) = 0.6700$$

$$d_2 = -0.4436 - 0.3\sqrt{0.25} = -0.5936 \quad N(-d_2) = N(0.59) = 0.7224$$

In the formula for the put premium, use  $t = 0.25$ , the period of the option.

$$P = 45e^{-0.06(0.25)}(0.7224) - 41.6324e^{-0.06(0.25)}(0.6700) = \mathbf{4.55}$$

[6/28/2010] On page 24, the solution to exercise 1.21 is incorrect. The correct solution is

Using equation (1.10), the maturity value of the Treasury for every share purchased is

$$K + \text{CumValue}(\text{dividends}) = 95 + 2e^{0.04(0.25)} + 2 = 99.0201$$

Therefore, the number of shares of stock is  $10,000/99.0201 = \mathbf{100.99}$ .