Errata and updates for ASM Exam MFE/3F (Ninth Edition Ninth Printing) sorted by date

[10/18/2016] On page 174, one line above the second table, change $N^{-1}\big(F_n(y_i)\big)$ to $N^{-1}(y_i)$.

[10/14/2016] On page 312, on the third line of the answer to Example 13I, change "strike price" to "stock price".

[9/28/2016] On page 141, on the seventh line of "2. *Lognormal tree*", delete h after $\delta - 0.5\sigma^2$).

[9/15/2016] On page 53, the solutions to exercises 2.7 and 2.8 are incorrect. The correct solution to exercise 2.7 is

Refer to Example 2E. We have $x + y \geq 1$, and to assure no investment, $5x + 3y \leq 4$. If the stock price is 55, we need the net amount received initially, $4 - 5x - 3y$, to be greater than the payment at the end, $5 - 15x$, so $4 - 5x - 3y \geq 5 - 15x$, or $10x - 3y \geq 1$. So the three constraints are

$$\begin{aligned} 5x + 3y &\leq 4 \\ 10x - 3y &\geq 1 \\ x + y &\geq 1 \end{aligned}$$

The intersection of the first and third constraints is $\left(\frac{1}{2}, \frac{1}{2}\right)$, and the intersection of the second and third constraints is $\left(\frac{4}{13}, \frac{9}{13}\right)$, so the answer is $\boxed{\frac{4}{13} \leq x \leq \frac{1}{2}}$.

The correct solution to exercise 2.8 is

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 ten purchased) plus the cost of the 75-strike puts (15 for each put purchased), or

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

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 plus the initial gain must exceed the gain on x 65-strike puts, or

$$\begin{aligned} 50(10) + 75y + 12x - 15y - 50 &\geq 65x \\ 53x - 60y &\leq 450 \end{aligned}$$

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 payment on the x 65-strike puts minus the proceeds from the y 75-strike puts (since the 50-strike puts may end up being worthless) to be less than the initial gain, or

$$\begin{aligned} 15x - 25y &\leq 12x - 50 - 15y \\ -3x + 10y &\geq 50 \end{aligned}$$

The intersection of the first and second constraints is

$$12x - 15y = 50$$

$$\begin{aligned} 53x - 60y &= 450 \\ 48x - 60y &= 200 \\ x &= 50 \\ y &= \frac{12(50) - 50}{15} = \frac{110}{3} \end{aligned}$$

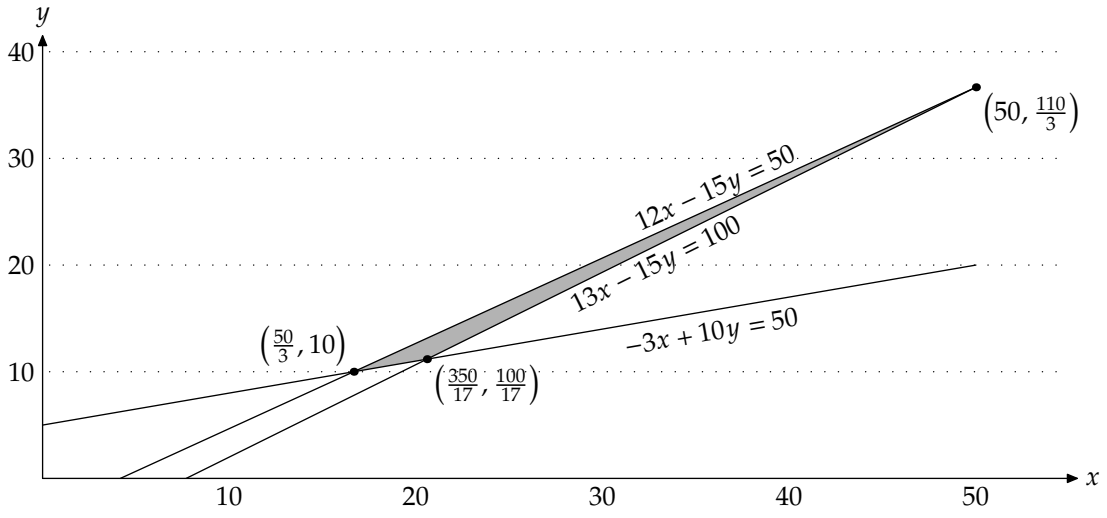
The intersection of the first and third constraints is

$$\begin{aligned} 12x - 15y &= 50 \\ -3x + 10y &= 50 \\ -12x + 40y &= 200 \\ y &= 10 \\ x &= \frac{50}{3} \end{aligned}$$

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

$$\begin{aligned} 53x - 60y &= 450 \\ -3x + 10y &= 50 \\ -18x + 60y &= 300 \\ 35x &= 750 \\ x &= \frac{150}{7} y \qquad\qquad = \frac{50 + 3(150/7)}{10} = \frac{80}{7} \end{aligned}$$

This figure shows the area of possible (x, y). Thus $\boxed{\mathbf{50/3 \le x \le 50}}$.



Thus $\boxed{\mathbf{50/3 \le x \le 50}}$.

[8/11/2016] On page 359, in exercise 14.34, on the second line, change the first "is" to "if".

[8/11/2016] On page 396, in the solution to exercise 15.7, on the first line, change "parameter" to "parameters".

[7/18/2016] On page 819, in the solution to question 13, on the last line, change $\Pr\big(\ln G(1) - \ln S(1)\big) > 0$ to $\Pr\big(\ln G(1) - \ln S(1) > 0\big)$.

[6/15/2016] On page 549, delete footnote 1.

[6/9/2016] On page 469, in the solution to exercise 20.17, on the first line of the page, change $\gamma t + \gamma Z(t)$ to $e^{\gamma t + \gamma Z(t)}$.

[5/31/2016] On page 41, on the fourth line from the bottom, change "gain of" to "gain is".

[5/22/2016] On page 417, 10 lines from the bottom, replace the sentence beginning "It is the limit" with

It is the limit, as n goes to ∞, of a sum of n random variables each equal to $\sqrt{t/n}$ with probability 0.5 and $-\sqrt{t/n}$ with probability 0.5.

[5/11/2016] On page 369, in the solution to exercise 14.30, on the fourth line, change 0.21301 to 0.21309.

[5/6/2016] On page 264, on the sixth and eight lines of the answer to Example 12A, change 9.542 to 9.543. Two lines from the bottom of the page, change 9.542 to 9.543 and 16.6 to 16.7. On the last line of the page, change $16.6 - 1.3 =$ **15.3** to $16.7 - 1.3 =$ **15.4**.

[5/6/2016] On page 268, on the seventh line, change 9.542 to 9.543 in both places. On the eighth line, change 2.898 to 2.897. On the last line of the answer to Example 12D, change $7.076 - 9.542 = -2.466$ to $7.076 - 9.543 = -2.467$. In the answer to Example 12E, on the second line of (a), change $9.370 - 9.543 = -0.173$ to $9.376 - 9.543 = -0.167$. On the third line of the answer to (b), change $12.248 - 9.543 = 2.705$ to $12.274 - 9.543 = 2.731$. On the third line of the answer to (c) on page 269, change $6.904 - 9.543 = -2.639$ to $6.916 - 9.543 = -2.627$.

[4/21/2016] On page 261, in the solution to exercise 11.12, on the second line, change $\sigma\sqrt{t}$ to $0.5\sigma\sqrt{t}$.

[4/12/2016] On page 168, in the solution to Quiz 7-3, on the first displayed line, surround the right side with N and parentheses:

$$N\left(\frac{\ln(60/70) + \big(0.15 - 0.05 - 0.5(0.2^2)\big)(0.25)}{0.2\sqrt{0.25}}\right)$$

[4/6/2016] On page 135, in the solution to exercise 5.14, on the fifth and second lines from the end, change 1.91579 to 1.921579 once on each line.

[4/6/2016] On page 139, on the second to third lines of the answer to Example 6A, change "the present value of the strike price" to "the present value of the interest on the strike price".

[3/7/2016] On page 519, in the solution to exercise 24.11, replace the last 3 lines with

$$N(d_1) = 0.10620 \quad N(d_2) = 0.10456$$
$$\text{Call} = 0.97\big(0.96(0.10620) - 0.10456/1.03\big) = 0.00042431$$

The price for a loan of 100,000 is $100{,}000(1.03)(0.00042431) =$ **43.70**.

[2/27/2016] On page 188, on the first line of the passage headed "Discrete Dividends", change S_t/S_0 to S_1/S_0.

[2/27/2016] On page 328, in the solution to exercise 13.29, on the second to last line, change "are the as" to "are then as".

[1/29/2016] On page 559, in Advantage 2 of the Cox-Ingersoll-Ross model, change $2ab > \sigma^2$ to $2ab > \bar{\sigma}^2$.

[12/23/2015] On page 409, starting with the fifth line of Section 16.4, delete "Assume $X(0) = 0\ldots$" up to the end of the displayed formula on the seventh line of the section.

[12/21/2015] On page 289, in the solution to exercise 12.11, on the last two lines of the first paragraph, change "and we buy this number of options" to "and we buy 2.33329 put options".

[12/17/2015] On page 251, change the last line of the page to

Calculate the implied volatilities of the stock based on the option prices for these three periods using the Black-Scholes model.

[11/4/2015] On page 564, in Example 26G, on the second line, add $\mathrm{d}t$ after $\big(0.06 - r(t)\big)$.

[10/25/2015] On page 147, the solution to Quiz 6-1 is incorrect. Even if the option is not exercised, the option holder will get the second dividend, the one paid three months from now, by exercising the option right before that dividend is paid. Therefore, to make exercising the option rational, the value of the dividend paid immediately must be more than the prsent value of interest. It is definitely not rational to exercise now if $D < 0.447757$.

[10/18/2015] On page 395, in the solution to exercise 15.4, on the last line, remove the negative sign in the exponent of $e^{-0.4z_i}$.

[10/17/2015] On page 494, in the solution to exercise 22.7, on the last line, change $\sqrt[3]{(S)}$ to $\sqrt[3]{S}$.

[8/21/2015] On page 825, in the solution to question 29, on the fifth line of the page, change $e^{=\gamma h}$ to $e^{-\gamma h}$.

[8/17/2015] On page 841, in the solution to question 3, on the second line, change $u = d$ to $u - d$.

[8/17/2015] On page 843, in the solution to question 8, on the fifth line, put "e^{rt}" after "$(r - \delta)$".

[8/16/2015] On page 506, in exercise 23.5, change statement (D) to

The probability that $Z(t) = Z(0)$ infinitely often over a finite interval is 1.

[8/13/2015] On page 17, 3 lines above the first displayed equation, change "the payment of $1/K$ foreign units for 1 domestic unit". to "the payment of 1 domestic unit for $1/K$ foreign units".

[8/1/2015] On page 152, in the table, on the first line below the heading, change $L(X)$ to $L(x)$.

[7/27/2015] On page 48, the answer to Example 2E is incorrect. The correct answer is

Let x be the number of 40-strike calls and y the number of 45-strike calls. The first condition we need is no initial investment; there is no guarantee of future gain, since it is possible that none of the options will pay off, so we need to assure no net investment if we want an arbitrage. To assure no net investment, we need

$$9.50x + 6.30y \le 7.00$$

To assure no loss, we will exercise our options when the 44-strike one is exercised. If the stock price S is less than 44, the 44-strike option will not be exercised. The stock price can be arbitrarily high. For each unit increase in stock price above 45, we must pay an additional 1 on the option we sold. So we must make sure that the options we buy also pay an additional 1 for each increase in the stock price above 45. That means $x + y \ge 1$.

The final condition takes care of when the stock price is between 44 and 45. In this range, only the 40-strike option pays off. We must make sure that the amount it pays is more than the amount we need to pay, or at least that the amount it pays plus the profit we made initially is more than the

amount we need to pay. The worst possible case is when the stock price is 45. The profit we made initially is

$$7 - 9.5x - 6.3y$$

The amount we need to pay if the stock price is 45 is

$$1 - 5x$$

So we must have

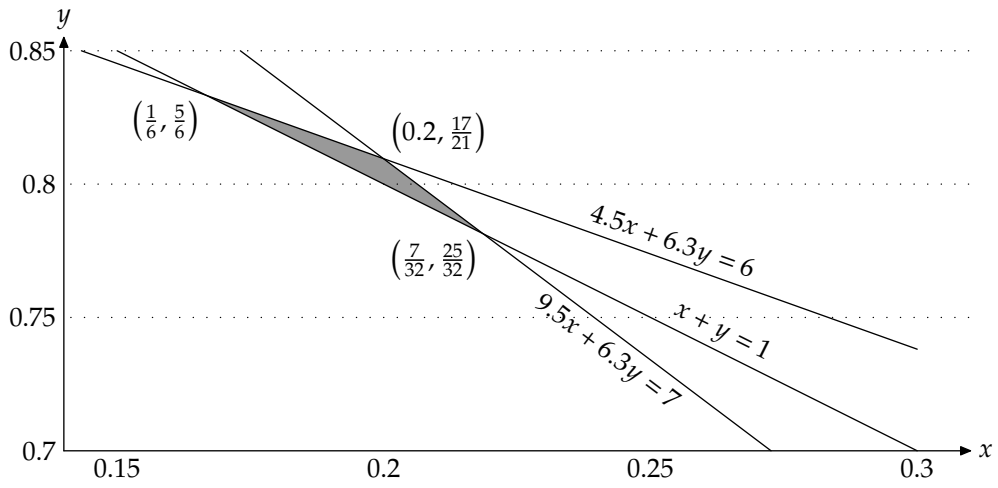
$$7 - 9.5x - 6.3y \geq 1 - 5x$$
$$4.5x + 6.3y \leq 6$$

So we have three conditions:

1. $9.5x + 6.3y \leq 7$
2. $4.5x + 6.3y \leq 6$
3. $x + y \geq 1$.

Calculate the intersections of the three lines.

As you can see from this figure:



x may be between 1/6 and 7/32, while y may be between 25/32 and 5/6.

[7/27/2015] On page 472, in the answer to Example 21B, on the second-to-last line, change ϕ to $-\phi$.

[7/27/2015] On page 528, in Example 25C, the tree is not a Black-Derman Toy tree. Change "Black-Derman-Toy" on the first line of the example and in the caption to Figure 25.8 to "binomial".

[7/13/2015] On page 872, in the solution to question 65, 2 lines from the end, change 0.03 to 0.04.

[7/13/2015] On page 875, in Figure B.8, in the third column, change 76.9 to 76.8.

[7/6/2015] On page 32, on the sixth line, change $Se^{-0.02} - Ke^{-0.06}$ to $Se^{-0.1} - Ke^{-0.3}$. Also, in the printed version of the manual, in the captions of Figures 2.1 and 2.2 (on page 33), change "vertical" to "−45°" and "horizontal" to "45°".

[7/6/2015] On page 37, 14 lines from the bottom of the page, change "prices" to "price".

[6/30/2015] On page 560, in the caption of Figure 26.4 on the first line, change Aassumes to Assumes.