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so many fake sites. this is the first one which worked! Many thanks

SOA Sample Exam Solutions

**Solution 1**

A Chapter 1, Put-Call Parity

We can use put-call parity to solve this problem:

$$C_{put}(K,T) + Ke^{-rT} = P_{call}(K,T) + S_0 - P_{put}(K,T)$$

$$[C_{put}(K,T) + P_{put}(K,T)] - S_0 = -Ke^{-rT}$$

$$-0.15 - 48 = -35e^{-0.05}$$

$$\ln\left(\frac{30.85}{35}\right) = -0.05$$

$$r = 0.0318$$

**Solution 2**

D Chapter 2, Arbitrage

Let  $X$  be the number of calls with a strike price of \$55 that are purchased for Mary's portfolio. If we assume that the net cost of establishing the portfolio is zero, then we can solve for  $X$ .

$$11 - X + 8 + 11X = 0$$

$$X = 2$$

The table below shows that regardless of the stock price at time  $T$ , Mary's portfolio is positive. Therefore, Mary is correct. This implies that John is incorrect.

Mary's Portfolio		Time $T$			
Transaction	Time 0	$S_T < 40$	$40 \leq S_T \leq 55$	$55 \leq S_T \leq 60$	$S_T > 60$
Buy 1 of C(40)	-11.00	0.00	$S_T - 40$	$S_T - 40$	$S_T - 40$
Sell 1 of C(55)	10.00	0.00	0.00	$-3(S_T - 55)$	$-3(S_T - 55)$
Buy 2 of C(55)	-20.00	0.00	0.00	0.00	$2(S_T - 55)$
Long \$1	-1.00	$e^{rT}$	$e^{rT}$	$e^{rT}$	$e^{rT}$
Total	0.00	$e^{rT}$	$e^{rT} + 3S_T - 40$	$e^{rT} + 11S_T - 25S_T$	$e^{rT}$

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