

Quiz A for 2:30 Class: 10/30/13

Name Key

Short Answer 1 (15 points): Assume you have sold (written) a put with a \$50 strike price. Sketch a graph of the possible payoffs from this short put position at the expiration of the option one month from today. Feel free to put your answer anywhere on this page.

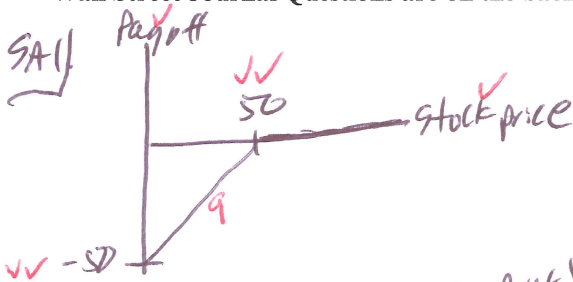
Short Answer 2 (15 points): What transactions or actions would generate each of the individual cash flows in the problem below if Pfizer's stock price ends up at \$27 per share when the options expire? Feel free to list your answers beside the table you (should) create for the problem. Otherwise, be sure to label everything clearly. Be sure to include amounts and locations for transaction.

Problem (75 points): Assume the current prices for Pfizer stock and for options that expire on June 21, 2014 (234 days from today) with a strike price of \$30 are as follows:

	Bid	Ask
Stock	31.27	31.28
Call	2.13	2.16
Put	1.09	1.12

If you assume the risk-free interest rate is 0.1%, what set of transactions today would generate an arbitrage profit today? What are the individual and total cash flows created today and at the expiration of the options if Pfizer's stock price ends up at \$27 or at \$36 per share (when the options expire)? Use a "+" for an inflow and a "-" for an outflow. I will assume an inflow if you do not give a sign. Note: Answer on a per-share basis.

Wall Street Journal Questions are on the back of this page.



$$PV(K) = \frac{30}{(1.001)^{234/365}} = 29.98$$

$$S + P = C + PV(K)$$

Buy $31.28 + 1.12 = 32.40$ $2.13 + 29.98 = 32.11$ Sell X
 Sell $31.27 + 1.09 = 32.36$ $2.16 + 29.98 = 32.14$ Buy ✓

Trans	CF ₀	CF ₁ (27)	CF ₁ (36)	Trans (SAT)
+5 Short stock	+31.27 ⁺⁴	-27 ⁺⁴	-36 ⁺⁴	Buy stock in market for \$27 ✓
+5 Sell put	+1.09 ⁺⁴	-3 ⁺⁴	0 ⁺⁴	(return to lender)
+5 Buy call	-2.16 ⁺⁴	0 ⁺⁴	+6 ⁺⁴	Buy stock for \$30 from holder of put ✓
+5 Buy risk-free bond	-29.98 ⁺⁴	+30 ⁺⁴	+30 ⁺⁴	+ sell for \$27 in market ✓
Total	+0.22⁺⁴	0	0	(let call expire)
		+3		Bond matures for \$30 ✓

Note: ✓ = +1