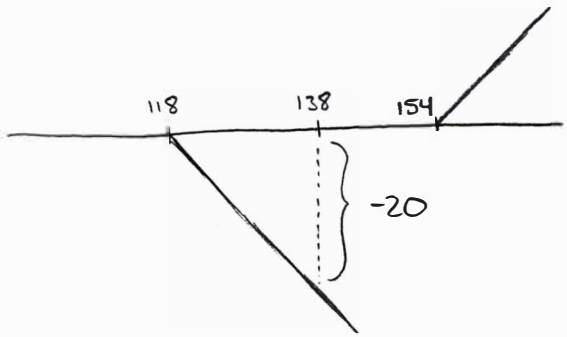
HW 8.1 (a) Key

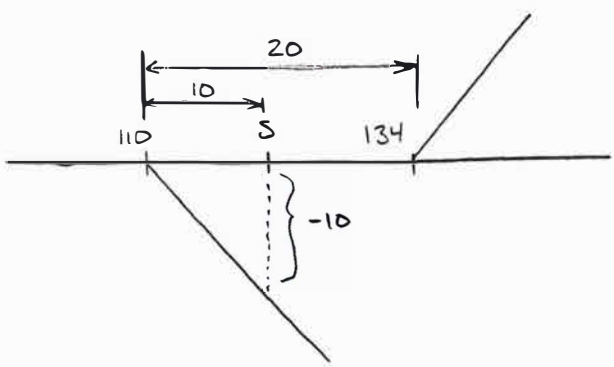
1. Trish buys a 154-strike European call on Asset A and sells (or writes) a 118-strike European call on Asset B. Coincidentally, it turns out that the spot price at expiration of both assets is \$138. What is Trish's total payoff from the two options? [12 #05]

[A] –20 B) 20 C) –4 D) 4 E) 36



2. Steve buys a 134-strike European call on Asset A and sells (or writes) a 110-strike European call on Asset B. Coincidentally, it turns out that the spot price at expiration of both assets is S. Steve's total payoff under the two options is –10. Determine S. [12 #06]

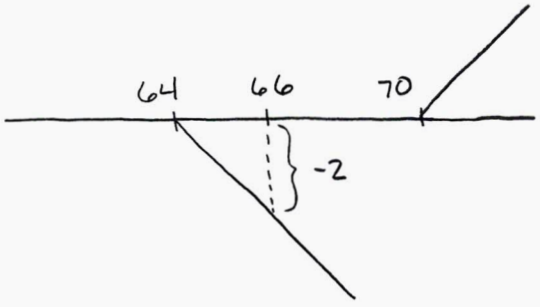
[A] 120 B) 110.5 C) 115 D) 125 E) 129.5



3. Arnold buys a one-year 70-strike European call for a premium of \$6.28. He also sells a 64-strike call on the same underlying asset for a premium of \$8.78. The spot price at expiration is \$66. The effective annual interest rate is 4%. What is Arnold's total profit at expiration for the two options? [12 #07]

A) ~~\$0.59~~ 0.60 B) \$0.55 C) \$0.57 D) \$0.62 E) \$0.64

K	FV(Prem)	
70	6.5312	(Long)
64	9.1312	(Short)



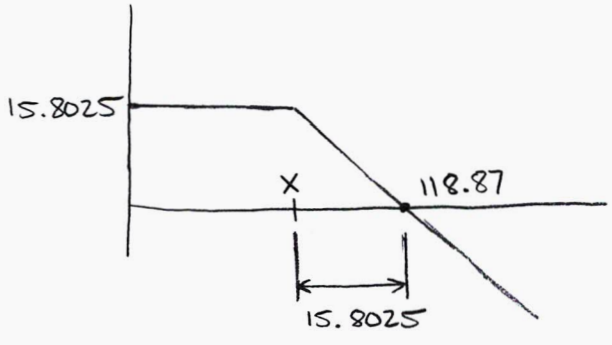
Profit = 9.1312 − 6.5312 − 2

= **0.6**

4. Kathy writes a one-year European call option with a strike price of X and a premium of \$15.05. Kathy's profit at expiration is 0 at a spot price of \$118.87. The risk-free interest rate is 5% effective. Determine X. [12 #08]

A) \$103.07 B) \$134.67 C) \$118.87 D) \$94.82 E) \$123.90

FV(Prem) = 15.05(1.05) = 15.8025



X = 118.87 − 15.8025

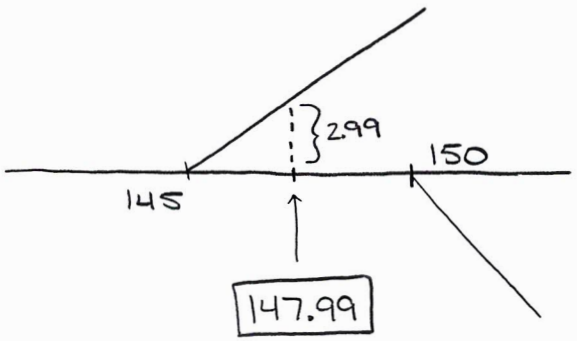
= **103.0675**

5. Suppose a speculator believes that the price of oil, currently at \$145 per barrel, will increase slightly, but not significantly, during the upcoming year. She therefore makes the following two transactions:

   1) She purchases a 12-month call option, with an strike price of \$145 per barrel, on 1,000 barrels of oil.
   2) She writes a 12-month call option, with an strike price of \$150 per barrel, on 1,000 barrels of oil.

   The price of oil at the time of the common expiration of these two options is X per barrel. The payoff from the speculator's combined call position is \$2990. Find X. [12 #10]

   A) \$147.99 B) \$152.99 C) \$142.01 D) \$147.01 E) \$145.01



PO per barrel = 2.99