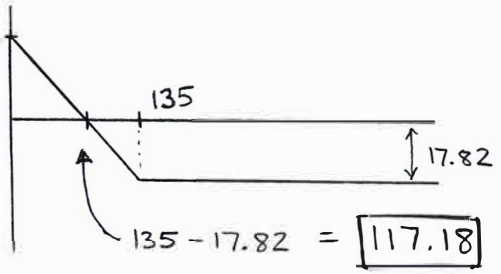
HW 8.2 (a) Key

1. Stuart buys a one-year 135-strike European put with a premium of \$16.97. The risk free rate of interest is 5% effective per annum. At a spot rate of S at expiration, Stuart's profit is 0. Determine S. [13 #01]

[A] \$117.18 B) \$152.82 C) \$151.97 D) \$118.84 E) \$118.03

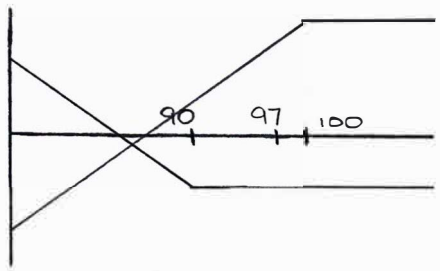
$FV(Prem) = 16.97(1.05) = 17.82$



2. Marge buys a 6-month 90-strike European put with a premium of \$6.27. She also writes a 6-month 100-strike European put with a premium of \$11.97 on the same underlying asset. The risk-free rate of interest is 6% effective per annum. The spot price at expiration is \$97. Marge's total profit on the two options is X. Find X. [13 #05]

[A] \$2.87 B) \$–8.87 C) \$–1.13 D) \$–12.87 E) \$2.70

$6.27(1.06)^{1/2} = 6.46$ $11.97(1.06)^{1/2} = 12.32$

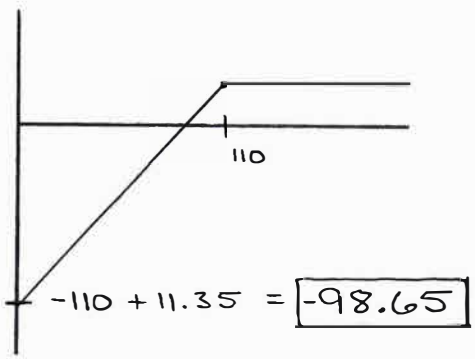


Net FV(Prem) = 5.86
PO from long put = 0
PO from short put = -3
Profit = 2.86

3. Diane writes a one-year 110-strike put with a premium of \$10.93. The risk-free rate of interest is 3.85% effective per annum. Find Diane's maximum loss. [13 #06]

[A] \$98.65 B) \$11.35 C) \$121.35 D) \$99.07 E) unlimited

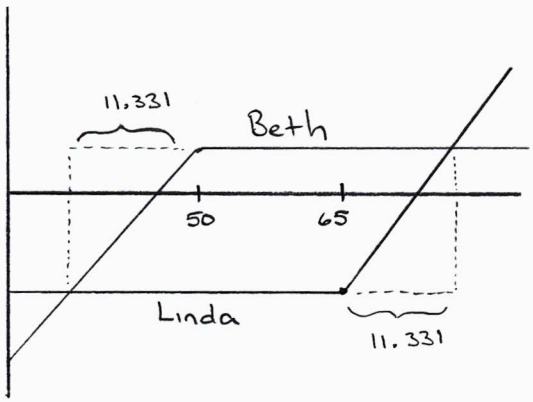
$10.93(1.0385) = 11.35$



4. Linda buys a 6-month 65-strike European call with a premium of \$9.00. Beth writes a 6-month 50-strike European put with a premium of \$1.98 on the same underlying asset. The risk-free interest rate is 6.5% compounded semiannually. For what range of spot prices at expiration is Beth's profit greater than Linda's? [13 #08]

A) From \$38.66 to \$76.34
B) From \$39.02 to \$75.98
C) From \$50 to \$65
D) Less than \$38.66 or more than \$76.34
E) Less than \$39.02 or more than \$75.98

$9.00(1.065)^{1/2} = 9.288$ $1.98(1.065)^{1/2} = 2.043$



$50 - 11.33 = 38.67$
to
$65 + 11.33 = 76.33$

5. Abby has a portfolio which consists of the following two options on a share of XYZ Corp. stock:

* A short put with an exercise price of \$120, with expiration date T.
* A long put with an exercise price of \$115, with expiration date T.

Ben has an identical portfolio of a short and long put, with the same exercise prices, but his options both expire at time U. At time T, the price of XYZ Corp. stock is \$118 per share. At time U, the price of XYZ Corp. stock is \$111 per share. Let P be Abby's payoff at time T and let Q be Ben's payoff at time U. Find $P - Q$. [13 #10]

A) \$3 B) \$–3 C) \$9 D) \$–9 E) \$0