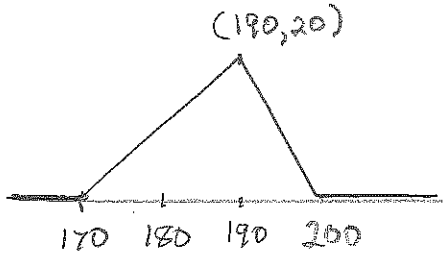
Exercise (I) A company owes $200 at time 2 and $500 at time 5. It creates assets of A_1 at time 1 and A_6 at time 6. Determine A_1 and A_6 to achieve Redington immunization at $i = .06$. Verify.

Exercise (II) XYZ owns an asset worth $100 today. They purchase a $95 strike put for $1 and sell a $110 call for $1.25, where both agreements expire one year from today. Describe their combined position (in payoff and profit) one year from today. Assume a 5% effective interest rate.

Exercise (III)



(a) Consider the above payoff function. Create a combination of Put options only with this payoff.

(b) If each option below 180 or above 195 sells for 1% of its strike price and those in between sell for 2% of their strike price, create the payoff diagram.

(c) What is the profit if $S_T = 185$?

Exercise IV A 6-month put with a $1000 strike price sells for $8.20. The current asset value is $972. What does a 6-month call with $1000 strike price sell for if the interest rate is 6% convertible monthly?

Exercise V Given the spot rates of zero-coupon bonds:

year	r(0,t)
1	.06
2	.062
3	.07

Find:

(a) zero coupon bond prices (for each year)

(b) one-year implied forward rates

(c) If you have a 3-year loan at a floating interest rate, find the 3-year fixed swap interest rate.