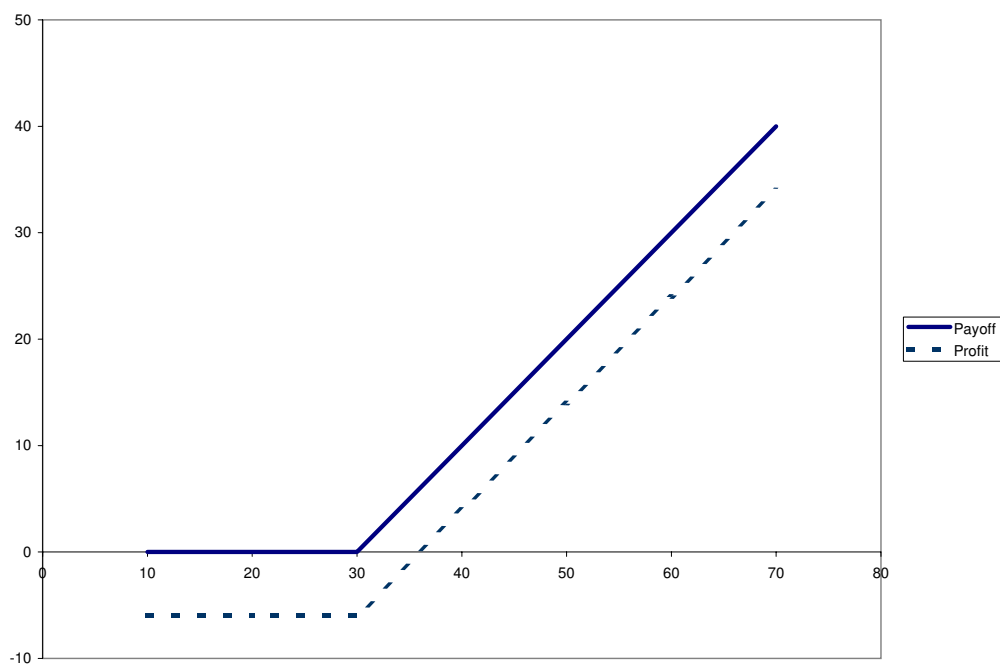


Problem Set 8

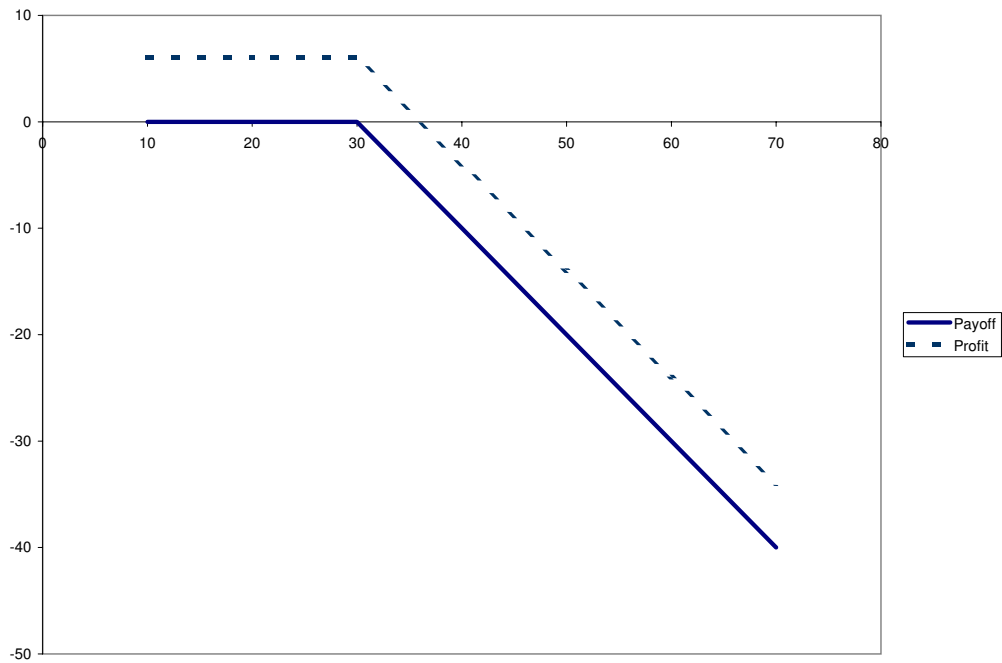
Foundations of Financial Markets

Answer key

1. You will exercise the put option because the strike price is higher than the current price. Your profit is $910 - 900.96 - 1.00 = 8.04$.
2. (a) The payoff and revenues are reported in the following picture.



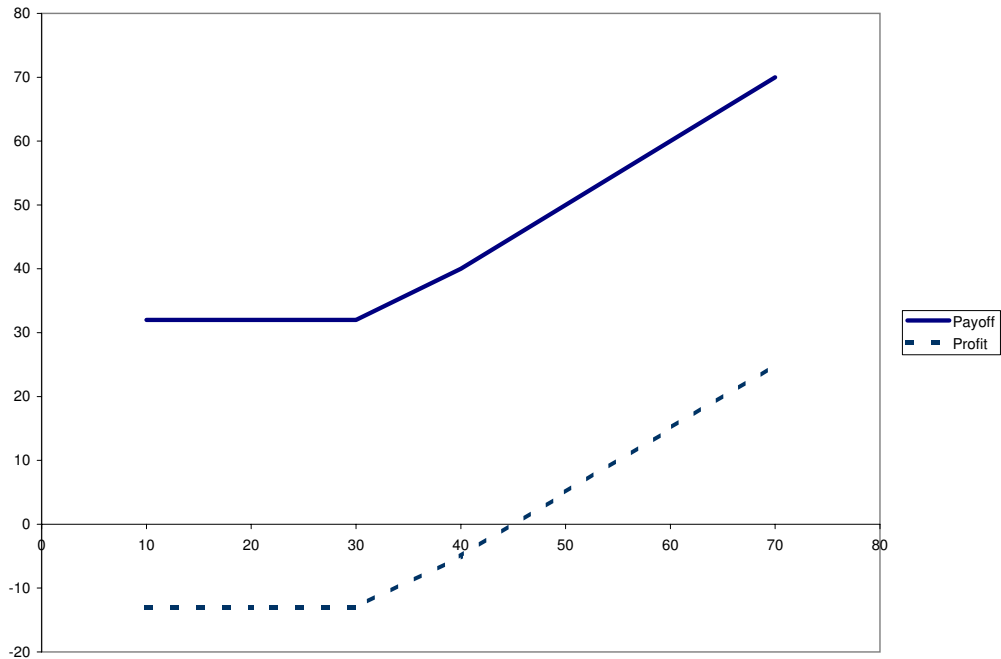
- (b) The payoff and revenues are reported in the following picture.



3. (a) The put option is worth the maximum of $X - S_T$ or 0. The net profit on the put equals its value minus the \$5 premium. The profit on the stock equals $S_T - S_0$.

Stock Price at Expiration	10	20	30	40	50	60	70
Put Option Value	22	12	2	0	0	0	0
Net Profit for Put	17	7	-3	-5	-5	-5	-5
Value of Stock + Put	32	32	32	40	50	60	70
Profit on Stock	-30	-20	-10	0	10	20	30
Net profit for Stock + Put	-13	-13	-13	-5	5	15	25

- (b) The graph below shows payoff and profit profiles.



4. (a) Buying a call option and a put option with the same exercise price and expiration date is a straddle.
- (b) You would engage in a straddle if you believed that the stock will experience a large change in price, but are not sure whether the price will increase or decrease.
- (c) The table of payoffs and profits is as follows.

Stock Price at Expiration	0.0	10	20	30	40	50	60
Call Option Value to Holder	0	0	0	0	10	20	30
Net Profit for Call holder	-0.40	-0.40	-0.40	-0.40	9.60	19.60	29.60
Put option value to holder	30	20	10	0	0	0	0
Net profit for put holder	25.70	15.70	5.70	-4.30	-4.30	-4.30	-4.30
Payoff for Call + Put	30	20	10	0	10	20	30
Net profit for Call + Put	25.30	15.30	5.30	-4.70	5.30	15.30	25.30

5. (a) The option expires the third Friday of November.
- (b) Since the current price is higher than the strike, the option is in the money.

- (c) 'Last' is the last price at which the option was exchanged. 'Volume' is total number of options that were traded yesterday. 'Open interest' is the total number of outstanding options.
- (d) Since the price is less than the strike price you would opt out of the call. Your rate of return is -100%.