

## Assignment 1 – DERIVATIVES – Chapter 1 – Lecture 4

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### A. Theoretical Questions

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1- Define the following concepts

- a. Forward contract
- b. Exercise price
- c. Future contract
- d. Call option
- e. Derivative instrument (product)
- f. Put option
- g. European option
- h. American option
- i. OTC derivatives

2. When comparing futures and forward contracts, it has been said that futures are more liquid but forwards are more flexible. Explain what this statement means and comment on how differences in contract liquidity and design flexibility might influence an investor's preference in choosing one instrument over the other.
3. Compare and contrast the gain and loss potential for investors holding the following positions: long forward, short forward, long call, short call, long put, and short put. Indicate what the terms *symmetric* and *asymmetric* mean in this context.

### B. Exercises & Problems

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The common stock of Sophia Enterprises serves as the underlying asset for the following derivative securities: (1) forward contracts, (2) European-style call options, and (3) European-style put options.

1. Assuming that all Sophia derivatives expire at the same date in the future, complete a table similar to the following for each of the following contract positions:
  - a. A long position in a forward with a contract price of \$50
  - b. A long position in a call option with an exercise price of \$50 and a front-end premium expense of \$5.20
  - c. A short position in a call option with an exercise price of \$50 and a front-end premium receipt of \$5.20

<b>Expiration date stock price</b>	<b>Expiration date derivative payoff</b>	<b>Initial premium</b>	<b>Net Profit</b>
25			
30			
35			
40			
45			
50			
55			
60			
65			
70			
75			

In calculating net profit, ignore the time differential between the initial derivative expense or receipt and the terminal payoff.

2. Graph the net profit for each of the three derivative positions, using net profit on the vertical axis and Sophia’s expiration date stock price on the horizontal axis. Label the breakeven (i.e., zero profit) point(s) on each graph.
3. Briefly describe the belief about the expiration date price of Sophia stock that an investor using each of these three positions implicitly holds.