

FINM2002 Derivatives/FINM6041 Applied Derivatives

Tutorial 4 Question

Question 1

Explain why an American option is always worth at least as much as a European option on the same asset with the same strike price and exercise date.

Question 2

Consider a put option to sell 100 shares for \$20 per share, what will happen to the option terms in the contract if

- (1) A \$1.5 per share cash dividend is made?
- (2) A 5-for-1 stock split is made?
- (3) A 10% stock dividend is made?

Question 3

A European call option on a non-dividend-paying stock has a strike price of \$19 and expires in one year. The current stock price is \$20. The risk-free rate is 10% p.a., continuously compounded. Please answer the following questions.

- (1) Is this call option ATM, ITM or OTM?
- (2) What is the upper and lower bound of this call option?
- (3) Assume the option is currently traded at \$25, please set up a strategy if there is arbitrage opportunity.

Question 4

A European put option on a stock has a strike price of \$19 and expires in one year. The current stock price is \$20. The stock is expected to pay a cash dividend of \$2 in 6 months. The risk-free rate is 10% p.a., continuously compounded and remains constant across time. Please compute the upper and lower bound of this put option.

Question 5

An American put option on a non-dividend-paying stock has a strike price of \$25 and expires in one year. The current stock price is \$20. The risk-free rate is 10% p.a., continuously compounded. Please compute the lower bound of this put option.

Question 6

Consider a pair of European options on a non-dividend-paying stock, expires in one year. The strike price is \$20. The current stock price is \$20. The risk-free rate is 10% p.a., continuously compounded. We know the price of the call option in this pair is \$5.

- (1) What is the price of the put option in the pair?
- (2) If the put option is traded at \$4, please design an arbitrage strategy.