Problem 7.1. (5 points) Consider a non-dividend-paying stock whose price over the following nine months is modeled by a three-period forward binomial tree. You notice that the possible stock prices after the first binomial period can be either $55 or $45.

What is the annual volatility of the stock used to build the above model?

(a) The information provided is insufficient to provide an answer.
(b) 0.10
(c) 0.14
(d) 0.20
(e) None of the above.

Problem 7.2. (2 points)
An Asian arithmetic-average-strike call option is at least as valuable as an otherwise identical Asian geometric-average-strike call option. True or false?

Problem 7.3. (2 points)
An arithmetic-average-price Asian put is always worth at least as much as an otherwise identical geometric-average-price Asian put. True or false?

Problem 7.4. (2 points)
A geometric-average-price Asian call option is at least as valuable as an otherwise identical arithmetic-average-price Asian call option. True or false?

Problem 7.5. (5 points) Let $A(T)$ denote the arithmetic average of a set of observed stock prices, and let $G(T)$ denote the geometric average of the same set of observed stock prices. Which one of the following inequalities is always correct?

(a) $(K - A(T))_+ \geq (K - G(T))_+$
(b) $(A(T) - K)_+ \geq (G(T) - K)_+$
(c) $(A(T) - K)_+ \geq (S(T) - K)_+$
(d) $(S(T) - K)_+ \geq (G(T) - K)_+$
(e) None of the above.