Problem 6.1. (2 points) You are using a binomial asset-pricing model to model the evolution of the price of a particular stock. Then, it is possible for the $\Delta$ in the replicating portfolio of a call option on that stock to exceed 1.

Problem 6.2. (2 points) Source: Problem 10.12 from the McDonald text.
Let $S(0) = 40, r = 0.08, \sigma = 0.3, \delta = 0$. You need to construct a 2–period forward binomial tree with each period on length one year for the above stock. Then, $u > 1.31$.

Problem 6.3. (2 points)
It is never optimal to exercise an American call option on a non-dividend-paying stock early. True or false?

Problem 6.4. (2 points)
American-style options are at least as valuable as otherwise identical European-style options. True or false?

Problem 6.5. (2 points)
An Asian arithmetic-average-strike call option is at least as valuable as an otherwise identical Asian geometric-average-strike option. True or false?

Problem 6.6. (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.