UNIVERSITY OF TEXAS AT AUSTIN

Quiz #23

American-option prices.

Provide your **complete solution** to the following problems. Final answers only, without appropriate justification, will receive zero points even if correct.

Problem 23.1. (2 points)
It is never optimal to exercise an American call option on a non-dividend-paying stock early. *True or false?*

Problem 23.2. (2 points)
American-style options are at least as valuable as otherwise identical European-style options. *True or false?*

Problem 23.3. (2 pts) Let $V^A(0,T)$ denote the price at time 0 of an American option with expiration date T. Then, we always have

$$V^A(0,T) \leq V^A(0,2T).$$

True or false?

Problem 23.4. (9 points) The current price of a non-dividend-paying stock is \$100 per share. A two-period binomial stock-price tree is used to model the movements of the stock price during the following year. The up and down factors are given to be $u = 1.2$ and $d = 0.9$.

The continuously compounded, risk-free interest rate equals 0.06.

Consider a \$110-strike, one-year American put on the above stock. Use the two-period binomial stock-price tree to calculate the current price of the American put.

(a) \$20.03
(b) \$15.41
(c) \$13.38
(d) \$11.43
(e) None of the above.