University of Texas at Austin

Quiz #16

Delta hedging.

Please, provide your **final answer only** to the following question(s):

Problem 16.1. (2 points) In practice, a market maker who delta-hedges **completely** insures himself against losses. *True or false?*

Problem 16.2. (2 points) Market makers usually do not need to rebalance their portfolios after the initial hedge is established. *True or false?*

Problem 16.3. (2 points) A market-maker writes a put option on a stock. To delta-hedge, (s)he needs to **buy** shares of the underlying stock. *True or false?*

Problem 16.4. (2 points) A market-maker writes a call option on a stock. To decrease the delta of this position, (s)he can **write** a call on the underlying stock. *True or false?*

Problem 16.5. (2 points) Consider an option whose payoff function is given by $v(s,T) = \min(s, 50)$. If a market-maker **writes** this option, they need to short sell shares of stock to create a delta-neutral portfolio. *True or false?*

Problem 16.6. (5 points) Assume the Black-Scholes framework. The goal is to delta-hedge a written one-year, at-the-money straddle on a non-dividend-paying stock whose current price is \$50. The stock's volatility is 0.20.

The continuously compounded risk-free interest rate is 0.10.

What is the cost of delta-hedging the straddle using shares of the underlying stock?

(a) \$21.33

(b) \$22.58

(c) \$24.33

(d) \$25.19

(e) None of the above.