Solutions to Quiz 6 (version A only)

1. Suppose that the state space is $[0, \infty)$, for a null hypothesis $H_0: \mu = 0$, which one of the following is the appropriate alternative hypothesis H_a?
   a. $H_a: \mu \neq 0$
   b. $H_a: \mu < 0$
   c. $H_a: \mu > 0$

   Answer: c

2. Suppose z_α is the critical point of the standard normal distribution $N(0,1)$. Suppose $\Phi(x)$ is the cumulative distribution function of the standard normal. How much is $\Phi(-z_\alpha)$?
   a. α
   b. $1 - \alpha$
   c. $\alpha/2$
   d. $1 - \alpha/2$

   Answer: A

3. In the hypotheses testing problems that we have covered so far, suppose the underlying distribution is a normal distribution, if the variances change from *known* to *unknown*, the reference distribution of the corresponding test statistics:
   a. changes from the standard normal to t distribution
   b. changes from the standard normal to a nonstandard normal distribution
   c. remain unchanged
   d. is hard to tell

   Answer: A

[4 points for submission. 2 points for each question. Total is 10.]