Practice Midterm 2, 116A
for exam 3/1/07

Multiple choice questions are worth 10 points each. No partial credit will be given for a wrong answer to one of these, but you must briefly explain your answers.

1 . For an $n \times n$ Hermitian matrix, non-degenerate eigenvectors

(a) are always orthogonal to each other.

(b) are always real.

(c) are always normalized so that their absolute values are 1.

(d) can equal 0 if the rank of the matrix is less than n.

2 . M is an $n \times n$ matrix and r is a vector of length n. The equation $Mr = 0$

(a) has an infinite number of solutions if $rank(M) < n$.

(b) has only one solution if $rank(M) = n$.

(c) has an infinite number of solutions if $det(M) = 0$.

(d) All of the above

(e) None of the above

Boas Chapter 3, 7.9, 7.17, 7.23, 11.42 (You don't have to do the last part of multiplying out $U^{-1}HU$).