Math 428 Worksheet due: Feb 23, 2011

NAME: _____

In this problem we consider a matrix with characteristic polynomial $p(\lambda) = (\lambda - 2)^7$. Let $d_k = dim((M - 2I)^k \vec{x} = \vec{0})$. For each of the following either find the Jordan form of M, or explain why there is no such matrix.

(a) $d_1 = 7$; (b) $d_1 = 1$; (c) $d_1 = 3, d_2 = 4$ and $d_3 = 7$.

(d) $d_1 = 3, d_2 = 5, d_3 = 6$ and $d_4 = 7$. (e) $d_1 = 3, d_2 = 5$ and $d_3 = 7$.

For each of the sequences that does correspond to a Jordan form give the minimal polynomial and invariant factors.