MATH 240 QUIZ 9 (Takehome) NAME _____

Prof. J. Beachy Due Monday, 11/12/2007 Score / 20

1. (10 pts) Let W be the subspace of R_4 spanned by the vectors $(1, -1, 1, 1)$ and $(1, 0, 2, 1)$. Use the Gram-Schmidt process to find an orthonormal basis for W.

2. (10 pts; §5.5 #14) Let W be the plane in $\mathbf{R}^3$ given by the equation $x + y - 2z = 0$, and let $\mathbf{v} = \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}$. Find vectors $\mathbf{w}$ in W and $\mathbf{u}$ in $W^\perp$ with $\mathbf{v} = \mathbf{w} + \mathbf{u}$. Then find the distance from $\mathbf{v}$ to W.