Math 304 Quiz 11 Summer 2007

Linear Algebra

1. Let S be the subspace of R^3 spanned by the vectors $\begin{pmatrix} 1 \\ 2 \\ 1 \end{pmatrix}$ and $\begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix}$.

   Find $S^{\perp}$, the orthogonal complement of S.

   [This is exercise 3(b) on page 233.]

2. Find a least squares solution of the linear system

$$\begin{pmatrix} 1 & -1 \\ 0 & 1 \\ 2 & 0 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} 3 \\ 0 \\ 4 \end{pmatrix}.$$