QUIZ #15, 10/16/07

MATH 54, FALL 2007

Show your work and justify your answers! Feel free to use both sides.

Name:

1. (5 pts) Find the least-squares solution $\overrightarrow{x}^*$ of the system $A\overrightarrow{x} = \overrightarrow{b}$, where $A = \begin{bmatrix} 1 & -2 \\ 1 & 0 \\ 0 & 3 \end{bmatrix}$ and $\overrightarrow{b} = \begin{bmatrix} 2 \\ 2 \\ 1 \end{bmatrix}$.

2. (3 pts) Find a basis for the orthogonal complement of the kernel of $\begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 4 \end{bmatrix}$.

3. (2 pts) True or False? (You needn't justify your answer.) If A is an $n \times m$ matrix, then A^T is a matrix whose kernel is the span of the columns of A.