

**MATH 335 Quiz 9****Name:**

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Show all work. Can use Matlab to check but show how you got there. 5 points each.

1) Find the best approximation to  $\mathbf{z} = \begin{bmatrix} 3 \\ -7 \\ 2 \\ 3 \end{bmatrix}$  by a linear combination of  $\mathbf{v}_1 = \begin{bmatrix} 1 \\ 1 \\ 0 \\ -1 \end{bmatrix}$  and

$$\mathbf{v}_2 = \begin{bmatrix} 2 \\ -1 \\ 3 \\ 1 \end{bmatrix}$$

2) Find a least squares solution of  $A\mathbf{x} = \mathbf{b}$  with  $A = \begin{bmatrix} 1 & -2 \\ -1 & 2 \\ 0 & 3 \\ 2 & 5 \end{bmatrix}$  and  $\mathbf{b} = \begin{bmatrix} 3 \\ 1 \\ -4 \\ 2 \end{bmatrix}$ .