Dr. Z.'s Math 250(2), (Fall 2010, RU) REAL Quiz #2 (Sept. 23, 2010)

NAME: (print!) _____

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1. (4 pts.) Determine the value of r, if any, for which the given system of linear equations is **inconsistent**.

$$x_1 - x_2 + 2x_3 = 4$$
$$3x_1 + rx_2 - x_3 = 2 \quad .$$

2. (4 pts.) Find a subset of the following set $\mathcal{S}$ of vectors in R^3 with the same span as $\mathcal{S}$ that is as small as possible.

$$\mathcal{S} = \left\{ \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} \quad , \quad \begin{bmatrix} 2 \\ 3 \\ 4 \end{bmatrix} \quad , \quad \begin{bmatrix} 3 \\ 4 \\ 5 \end{bmatrix} \right\} \quad .$$

3. True or False (Explain!, unexplained answered get no credit)

(a) (1 pt.) The number of rows in a matrix equals its rank.

(b) (1 pt.) If $\mathbf{u}$ and $\mathbf{v}$ are any two vectors in R^2, then their span is the whole of R^2.