MATH 54 – QUIZ 3

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Name:_____

Instructions: You have 20 minutes to take this quiz, for a total of 10 points. May your luck be one-to-one!

1. *(5 points)* Are the columns of the following matrix linearly independent or linearly dependent?

$$\begin{bmatrix} -4 & -3 & 15 \\ 0 & -1 & 5 \\ 1 & 1 & -5 \\ 2 & 1 & -10 \end{bmatrix}$$

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2. *(5 points)* Let $T(x, y) = (x + y, x - 2y)$.

   (a) *(2 points)* Show that T is a linear transformation.
   (b) *(2 points)* Is T one-to-one?
   (c) *(1 point)* Does T map $\mathbb{R}^2$ **onto** $\mathbb{R}^2$?