

QUIZ #3, 9/4/07

MATH 54, FALL 2007

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

Name:

ID:

1. (4 pts) Find

$$\begin{bmatrix} 2 & -1 & 3 \\ 1 & 6 & 0 \\ 0 & 2 & -2 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \\ 3 \end{bmatrix}$$

2. (a) (4 pts) What is the rank of the matrix

$$A = \begin{bmatrix} 0 & -1 & -5 \\ 1 & 4 & 0 \\ 0 & 3 & -2 \end{bmatrix} ?$$

(b) (2 pts) Using the matrix A from part (a), if we choose a vector $\vec{b} = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \end{bmatrix}$ in \mathbb{R}^3 and try to

solve $A\vec{x} = \vec{b}$ (where $\vec{x} = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$), how many solutions will there be? To get full credit, briefly justify your answer (in words is fine).