

Math 205

Quiz #1

1. Find all possible solutions to the following system of equations:

$$x - y + z = 0,$$

$$2x + y + 2z = 0,$$

$$3x - 5y + 3z = 0.$$

$$\left[\begin{array}{ccc|c} 1 & -1 & 1 & 0 \\ 2 & 1 & 2 & 0 \\ 3 & -5 & 3 & 0 \end{array} \right] \xrightarrow{\substack{-2R_1 \\ -3R_1}} \left[\begin{array}{ccc|c} 1 & -1 & 1 & 0 \\ 0 & 3 & 0 & 0 \\ 0 & -2 & 0 & 0 \end{array} \right]$$

$$\Rightarrow y = 0 \\ x = -z,$$

2. Let

$$A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}.$$

Find A^3 .

$$A^2 = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$$

$$A^3 = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$$