Math 105 - Finite Mathematics - J-term 2017

Quiz 7

January 17, 2017

Name:_____

Problem 1. *Solve the system of equations using an augmented matrix*

$$\begin{aligned} x &- 2y = 1 \\ 2x &- y = 5 \end{aligned}$$

$$\left[\begin{array}{cc|c} 1 & -2 & 1 \\ 2 & -1 & 5 \end{array}\right] \sim \left[\begin{array}{cc|c} 1 & -2 & 1 \\ 0 & 3 & 3 \end{array}\right] \sim \left[\begin{array}{cc|c} 1 & -2 & 1 \\ 0 & 1 & 1 \end{array}\right] \sim \left[\begin{array}{cc|c} 1 & 0 & 3 \\ 0 & 1 & 1 \end{array}\right]$$

$x=3, y=1$

Problem 2. *Use row operations to change the following matrix to reduced form*

$$\left[\begin{array}{ccc|c} 1 & 2 & -2 & -1 \\ 0 & 3 & -6 & 1 \\ 0 & -1 & 2 & -\frac{1}{3} \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & 2 & -2 & -1 \\ 0 & 3 & -6 & 1 \\ 0 & -1 & 2 & -1/3 \end{array}\right] \sim \left[\begin{array}{ccc|c} 1 & 2 & -2 & -1 \\ 0 & 1 & -2 & 1/3 \\ 0 & -1 & 2 & -1/3 \end{array}\right] \sim \left[\begin{array}{ccc|c} 1 & 2 & -2 & -1 \\ 0 & 1 & -2 & 1/3 \\ 0 & 0 & 0 & 0 \end{array}\right]$$

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