$\bar{x} = 22/30$ ~ 20 min median

med = 22

MATH 332

Quiz I

September 7, 1990

Name Key

1. Write the augmented matrix for the following system of linear equations:

$$2x_1 + 8x_3 + x_5 = 3$$
$$-x_2 + x_3 + 2x_5 = 9$$
$$10x_1 + x_4 = 0$$

$$\left[\begin{array}{ccccc|c} 2 & 0 & 8 & 0 & 1 & 3 \\ 0 & -1 & 1 & 0 & 2 & 9 \\ 10 & 0 & 0 & 1 & 0 & 0 \end{array}\right]$$

2 missed

2. How many solutions are there for the system of equations associated with each of the following augmented matices? [x = a nonzero number.]

a. $\left[\begin{array}{ccc|c} x & x & x & x \\ 0 & x & x & x \\ 0 & 0 & x & x \end{array}\right]$ 1

b. $\left[\begin{array}{ccc|c} x & x & x & x \\ 0 & 0 & x & x \\ 0 & 0 & 0 & x \end{array}\right]$ none

c. $\left[\begin{array}{cccc|c} x & x & x & x & x \\ 0 & x & x & x & x \\ 0 & 0 & x & x & x \end{array}\right]$ ∞

8 missed

3. Find all solutions (if any) for the system with augmented matrix:

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

$x_5 = t$

$x_4 - 2t = 0$

$x_4 = 2t$

$x_3 = s$

$2x_2 + 2(2t) + 3t = -2$

$2x_2 = -2 - 7t$

$x_2 = -1 - \frac{7}{2}t$

$x_1 + (-2 - 7t) + 3s - 2t = 3$

$x_1 = 5 + 9t - 3s$

$(5 + 9t - 3s, -1 - \frac{7}{2}t, s, 2t, t)$

Several

10–12 m

4. Find all solutions (if any) for the following system of equations:

$$x_1 + 2x_2 + x_4 = 5$$
$$-2x_1 - 2x_2 - 3x_3 = -27$$
$$3x_1 - 2x_2 + 17x_3 - 8x_4 = 118$$
$$4x_2 - 6x_3 + 5x_4 = -34$$

$$\left[\begin{array}{cccc|c} 1 & 2 & 0 & 1 & 5 \\ -2 & -2 & -3 & 0 & -27 \\ 3 & -2 & 17 & -8 & 118 \\ 0 & 4 & -6 & 5 & -34 \end{array}\right] \begin{array}{c} \\ 2+2(1) \\ 3-3(1) \\ \\ \end{array} \left[\begin{array}{cccc|c} 1 & 2 & 0 & 1 & 5 \\ 0 & 2 & -3 & 2 & -17 \\ 0 & -8 & 17 & -11 & 103 \\ 0 & 4 & -6 & 5 & -34 \end{array}\right]$$

$$\begin{array}{c} \\ \\ 3+4(2) \\ 4-2(2) \end{array} \left[\begin{array}{cccc|c} 1 & 2 & 0 & 1 & 5 \\ 0 & 2 & -3 & 2 & -17 \\ 0 & 0 & 5 & -3 & 35 \\ 0 & 0 & 0 & 1 & 0 \end{array}\right]$$

103
68
35

$x_4 = 0$

$5x_3 = 35$

$x_3 = 7$

$2x_2 - 21 = -17$

$2x_2 = 4$

$x_2 = 2$

$x_1 + 2(2) = 5$

$x_1 = 1$

$(1, 2, 7, 0)$

10 missed (all close)

3 need more md