Quiz 1 (11 am)

1. Solve. (10 pts.)

$$2x - 3y = 7$$
$$x + 5y = 3$$

check ans.

$\frac{88}{13} - \frac{-3}{13} = \frac{85}{13} = 7$ ✓

$\frac{44}{13} + \frac{-5}{13} = \frac{39}{13} = 3$ ✓

$\left[\begin{array}{cc|c} 2 & -3 & 7 \\ 1 & 5 & 3 \end{array}\right] \sim \left[\begin{array}{cc|c} 1 & 5 & 3 \\ 2 & -3 & 7 \end{array}\right]$

$\frac{3*13+5}{13} = \frac{39+5}{13} = 44/13$

$\sim \left[\begin{array}{cc|c} 1 & 5 & 3 \\ 0 & -13 & 1 \end{array}\right] \sim \left[\begin{array}{cc|c} 1 & 5 & 3 \\ 0 & 1 & -1/13 \end{array}\right]$ ($-2R_1+R_2$; $-\frac{1}{13}R_2$)

$\sim \left[\begin{array}{cc|c} 1 & 0 & 3+-5(\frac{-1}{13}) \\ 0 & 1 & -1/13 \end{array}\right] = \left[\begin{array}{cc|c} 1 & 0 & 44/13 \\ 0 & 1 & -1/13 \end{array}\right]$ ($-5R_2+R_1$)

ANS.

$x = 44/13$

$y = -1/13$

2. Solve. (10 pts.)

$$x - 2y + z = 1$$
$$2y - z = 3$$
$$x \quad - z = 2$$

check ans.

$4 - 5 + 2 = 1$ ✓

$5 - 2 = 3$ ✓

$4 - 2 = 2$ ✓

$\left[\begin{array}{ccc|c} 1 & -2 & 1 & 1 \\ 0 & 2 & -1 & 3 \\ 1 & 0 & -1 & 2 \end{array}\right] \sim \left[\begin{array}{ccc|c} 1 & -2 & 1 & 1 \\ 0 & 2 & -1 & 3 \\ 0 & 2 & -2 & 1 \end{array}\right]$ ($-R_1+R_3$)

$\sim \left[\begin{array}{ccc|c} 1 & -2 & 1 & 1 \\ 0 & 2 & -1 & 3 \\ 0 & 0 & -1 & -2 \end{array}\right] \sim \left[\begin{array}{ccc|c} 1 & -2 & 1 & 1 \\ 0 & 2 & 0 & 5 \\ 0 & 0 & 1 & 2 \end{array}\right]$ ($-R_2+R_3$; R_3+R_2; $-R_3$)

$\sim \left[\begin{array}{ccc|c} 1 & 0 & 1 & 6 \\ 0 & 2 & 0 & 5 \\ 0 & 0 & 1 & 2 \end{array}\right] \sim \left[\begin{array}{ccc|c} 1 & 0 & 0 & 4 \\ 0 & 1 & 0 & 5/2 \\ 0 & 0 & 1 & 2 \end{array}\right]$ (R_2+R_1; $-R_3+R_1$; $\frac{1}{2}R_2$)

ANS.

$x = 4$

$y = 5/2$

$z = 2$