Math 202 Quiz # 7-b

Name: _____ Section # _____ Ser. # _____

Solve the following system: $5x_1 + 4x_2 - 16x_3 = -10$

$x_2 + x_3 = -5$

$x_1 - x_2 - 5x_3 = 7$

$$\left[\begin{array}{ccc|c} 5 & 4 & -16 & -10 \\ 0 & 1 & 1 & -5 \\ 1 & -1 & -5 & 7 \end{array}\right]$$

$R_1 \leftrightarrow R_3$

$$\left[\begin{array}{ccc|c} 1 & -1 & -5 & 7 \\ 0 & 1 & 1 & -5 \\ 5 & 4 & -16 & -10 \end{array}\right]$$

$-5R_1 + R_3$

$$\left[\begin{array}{ccc|c} 1 & -1 & -5 & 7 \\ 0 & 1 & 1 & -5 \\ 0 & 9 & 9 & -45 \end{array}\right]$$

$-9R_2 + R_3$, $R_2 + R_1$

$$\left[\begin{array}{ccc|c} 1 & 0 & -4 & 2 \\ 0 & 1 & 1 & -5 \\ 0 & 0 & 0 & 0 \end{array}\right]$$

$\Rightarrow \quad x_2 = -5 - x_3 \quad$ & $\quad x_1 = 2 + 4x_3$

Take $x_3 = t$, then the solution is:

$x_1 = 2 + 4t$

$x_2 = -5 - t$

$x_3 = t$