MA 35100

HW # 1 -   due Friday, August 30

1. Page 173: **T/F Questions**: # **3.12, 3.15, 3.20**.

2. If $A = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix}$, find all matrices B such that $AB = BA$.   (A and B are said to *commute*).

3. Solve these $m \times n$ linear systems:

$$(a) \quad \begin{cases} x - y + 2z = 1 \\ 2y - 2z = 3 \\ 2x + y + z = 1 \end{cases} \qquad (b) \quad \begin{cases} x_1 - 2x_2 + 2x_3 - x_4 = 3 \\ 3x_1 + x_2 + 6x_3 + 11x_4 = 16 \\ 2x_1 - x_2 + 4x_3 - 4x_4 = 9 \end{cases}.$$

4. Page 64: # 1.67(a)(b).

5. A city council is trying to determine if stop lights are needed at certain intersections. Below is the data collected for the number of cars entering or leaving each intersection per hour. **Set up but do not solve** a linear system in the unknowns x_1, x_2, x_3, and x_4: