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**Math 224**  
**Class Session 3**  
**September 4, 2007**  
**In-class Maple Exercises: Solving Linear Systems**

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1. Solve the following linear system in Maple.

$$\begin{aligned}2x + y - 3z &= 0 \\6x + 3y - 8z &= 0 \\2x - y + 5z &= -4\end{aligned}$$

2. Solve the following linear system in Maple.

$$\begin{aligned}2x + 6y - z &= 8 \\3x + 9y &= 15 \\2x - 5y + 6z &= 1\end{aligned}$$

3. Solve the following linear system in Maple.

$$\begin{aligned}x + y + z &= 1 \\4x + 3y + 5z &= 7 \\2x + y + 3z &= 6\end{aligned}$$

4. Solve the following linear system in Maple.

$$\begin{aligned}x + 2y - 3z + w &= 2 \\3x + 6y - 8z - 2w &= 1\end{aligned}$$

5. Let  $E$  denote the elementary matrix  $E = \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ . How is  $E$  obtained from the  $3 \times 3$  identity matrix? Let  $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ . Evaluate  $E \cdot A$ . How is the result related to  $A$ ?

6. Let  $B = \begin{bmatrix} -7 & 5 \\ 4 & 1 \\ 0 & 26 \end{bmatrix}$ . Evaluate  $E \cdot B$ . How is the result related to  $B$ ? What is your conjecture about multiplication the left by elementary matrices?