Section 1.4 Solving Systems of Linear Equations

5. you can use octave as a calculator:

```
octave:1> A=[-1,3,0,1,4;1,-3,0,0,-1;2,-6,2,4,0;0,0,1,3,-4]
A =

  -1   3   0   1   4
   1  -3   0   0  -1
   2  -6   2   4   0
   0   0   1   3  -4

octave:2> rref(A)
ans =

   1  -3   0   0   0
   0   0   1   0   0
   0   0   0   1   0
   0   0   0   0   1
```

14.

$$\begin{bmatrix} 4 & -3 & | & 10 \\ 8 & -1 & | & 10 \end{bmatrix} \sim \begin{bmatrix} 4 & -3 & | & 10 \\ 0 & 5 & | & -10 \end{bmatrix},$$

$$\begin{cases} 4x_1 - 3x_2 = 10 \\ \quad\quad\quad 5x_2 = -10 \end{cases} \Rightarrow \begin{cases} x_1 = 1 \\ x_2 = -2 \end{cases}$$

26.

$$\begin{bmatrix} 1 & -4 & 1 & | & 8 \\ 3 & -12 & 5 & | & 26 \\ 2 & -9 & -1 & | & 14 \end{bmatrix} \sim \begin{bmatrix} 1 & -4 & 1 & | & 8 \\ 0 & 1 & 3 & | & 2 \\ 0 & 0 & 2 & | & 2 \end{bmatrix},$$

which shows that $\begin{bmatrix} 8 \\ 26 \\ 14 \end{bmatrix}$ is in the span of $\begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$, $\begin{bmatrix} -4 \\ -12 \\ -9 \end{bmatrix}$, and

$\begin{bmatrix} 1 \\ 5 \\ -1 \end{bmatrix}$