1. 17

2.
$$\left\{ \begin{bmatrix} 2 \\ 0 \\ -3 \\ -1 \end{bmatrix}, \begin{bmatrix} -1 \\ 1 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \\ 0 \\ 0 \end{bmatrix} \right\}$$

$$\left\{ \begin{bmatrix} -1 \\ -2 \\ 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} -4 \\ -14 \\ 0 \\ -9 \\ 1 \end{bmatrix} \right\}$$

3. 1) $\frac{7}{9}$

2) 1

3) -4

4) 2

5) -36

6) 9

4. The 2x3 matrix will all entries equal to zero.

5.
- is NOT
- IS
- linearly independent
- is NOT (does not span).

6. $A \begin{bmatrix} 3 \\ 4 \\ 5 \end{bmatrix} = \underline{b}$ & $A\underline{x} = \underline{b}$

$$\iff A \left(\begin{bmatrix} 3 \\ 4 \\ 5 \end{bmatrix} - \underline{x} \right) = \underline{0}.$$

$$A \left(\begin{bmatrix} 3 \\ 4 \\ 5 \end{bmatrix} - \begin{bmatrix} 1 \\ 2 \\ 2 \end{bmatrix} \right) = A \begin{bmatrix} 2 \\ 2 \\ 3 \end{bmatrix} = \underline{0}, \text{ so } \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix} = \underline{x}.$$