MATH 54, FALL 2016, QUIZ 2

(1) Find all solutions of the following system of linear equations:

$$
\begin{array}{rrrrrr}
3x_1 & + & 6x_2 & + & 3x_3 & = & -3 \\
5x_1 & - & 3x_2 & + & 18x_3 & = & 8 \\
7x_1 & + & 2x_2 & + & 19x_3 & = & 5
\end{array}
$$

(2) For what values of h is the vector $\mathbf{c}$ a linear combination of $\mathbf{a}$ and $\mathbf{b}$? For what values of h is $\mathbf{d}$ a linear combination of $\mathbf{a}$ and $\mathbf{b}$?

$$
\mathbf{a} = \begin{bmatrix} 1 \\ 0 \\ 3 \end{bmatrix}, \mathbf{b} = \begin{bmatrix} h \\ 2 \\ -1 \end{bmatrix}, \mathbf{c} = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}, \mathbf{d} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}
$$