1. Find an equation involving \(a\), \(b\), and \(c\) that makes the following augmented matrix a consistent system:
\[
\begin{bmatrix}
1 & -4 & 7 & | & a \\
0 & 3 & -5 & | & b \\
-2 & 5 & -9 & | & c
\end{bmatrix}
\]

2. Determine the set of all ordered pairs of numbers \((h, k)\) for which the system
\[
\begin{align*}
x_1 + hx_2 &= 2 \\
4x_1 + 8x_2 &= k
\end{align*}
\]
(a) has no solution.
(b) has a unique solution.
(c) has infinitely many solutions.

3. Let \(v_1 = \begin{bmatrix} 1 \\ 0 \\ -2 \end{bmatrix}\), \(v_2 = \begin{bmatrix} -3 \\ 1 \\ 8 \end{bmatrix}\), and \(y = \begin{bmatrix} h \\ -5 \\ -3 \end{bmatrix}\).
For what value(s) of \(h\) is \(y\) is the plane spanned by \(v_1\) and \(v_2\)?

4. Let \(A = \begin{bmatrix} 2 & 0 & 6 \\ -1 & 8 & 5 \\ 1 & -2 & 1 \end{bmatrix}\), let \(b = \begin{bmatrix} 10 \\ 3 \\ 3 \end{bmatrix}\), and let \(W\) be the set of all linear combinations of the columns of \(A\).
(a) Is \(b\) in \(W\)?
(b) Show that the third column of \(A\) is in \(W\).