

A. For what values of  $h$  is the following system of equations consistent?

$$\begin{aligned}x + y + hz &= 0 \\ 2x + 3y &= 0 \\ y + z &= 1\end{aligned}$$

B. Find all solutions to the system of equations

$$\begin{aligned}4y + 3z &= 0 \\ x + 1y + 2z &= 0 \\ 5x + y + 7z &= 0\end{aligned}$$

C. Show that the following system of equations has a solution no matter what  $b_1, b_2$ , and  $b_3$  are.

$$\begin{aligned}x + y + z &= b_1 \\ 4y - z &= b_2 \\ -3x + y + 5z &= b_3\end{aligned}$$

Are there values of  $b_1, b_2, b_3$  for which the system has more than one solution?

D. For what values of  $h$  is the following system of equations consistent?

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E. Find all solutions to the system of equations

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F. Show that the following system of equations has a solution no matter what  $b_1, b_2$ , and  $b_3$  are.

$$\begin{aligned}x + y + z &= b_1 \\ 4y - z &= b_2 \\ -3x + y + 5z &= b_3\end{aligned}$$

Are there values of  $b_1, b_2, b_3$  for which the system has more than one solution?

Suppose  $(x_1, y_1)$  and  $(x_2, y_2)$  are solutions to the system of linear equations

$$\begin{aligned}ax + by &= 0 \\ cx + dy &= 0\end{aligned}$$

Show that  $(x_1 + x_2, y_1 + y_2)$  is also a solution.