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1. Give an example of a 4×3 matrix A whose columns are linearly independent or explain why none exists. (If A does exist, briefly explain why you know its columns are linearly independent.)
 2. Give an example of a 3×4 matrix B whose columns are linearly independent or explain why none exists. (If B does exist, briefly explain why you know its columns are linearly independent.)
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Solutions.

1. The columns of $A = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{pmatrix}$ are linearly independent because A has a pivot in each column.
2. The number of pivots in any matrix cannot be greater than either its number of rows or its number of columns. A 3×4 matrix can't have more than 3 pivots, so it can't have a pivot in each column. B does not exist.