

1.1.19

Determine the value(s) of h such that the matrix is the augmented matrix of a consistent linear system.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system if h ≠ 5.

  The matrix is the augmented matrix of a consistent linear system is the consistent linear system.

  The matrix is the consistent linear system is the consistent linear system.

  The matrix is the consistent linear system is the consistent linear system is the consistent linear system.

  The matrix is the consistent linear system is the consistent linear system is the consistent linear system.

  The matrix is the consistent linear system is the cons (Use a comma to separate answers as needed. Type an integer or a simplified fraction.)
- O B. The matrix is the augmented matrix of a consistent linear system if h = \_\_\_\_\_ (Use a comma to separate answers as needed. Type an integer or a simplified fraction.)
- C. The matrix is the augmented matrix of a consistent linear system for every value of h.
- D. The matrix is not the augmented matrix of a consistent linear system for any value of h.

Score: 1 of 1 pt Test Score: 100%, 8 4 2 of 8 🔻  $\blacktriangleright$ 



Row reduce the matrix to reduced echelon form. Identify the pivot positions in the final matrix and in the original matrix, and list the pivot columns.

Row reduce the matrix to reduced echelon form and identify the pivot positions in the final matrix. The pivot positions are indicated by bold values. Choose the correct answer below.

1 0 0 -1 0 1 0 -1

 $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad \begin{bmatrix} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & -2 \\ 0 & 0 & 1 & -1 \end{bmatrix} \qquad \begin{bmatrix} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{bmatrix}$ 

Identify the pivot positions in the original matrix. The pivot positions are indicated by bold values. Choose the correct answer below.

1 2 4 -11 2 4 6 -18 4 6 8 - 26

 1 2 4 -11
 2 4 6 -18
 2 4 6 -18

 4 6 8 -26
 4 6 8 -26
 4 6 8 -26

 1 2 4 -11
 2 4 6 -18

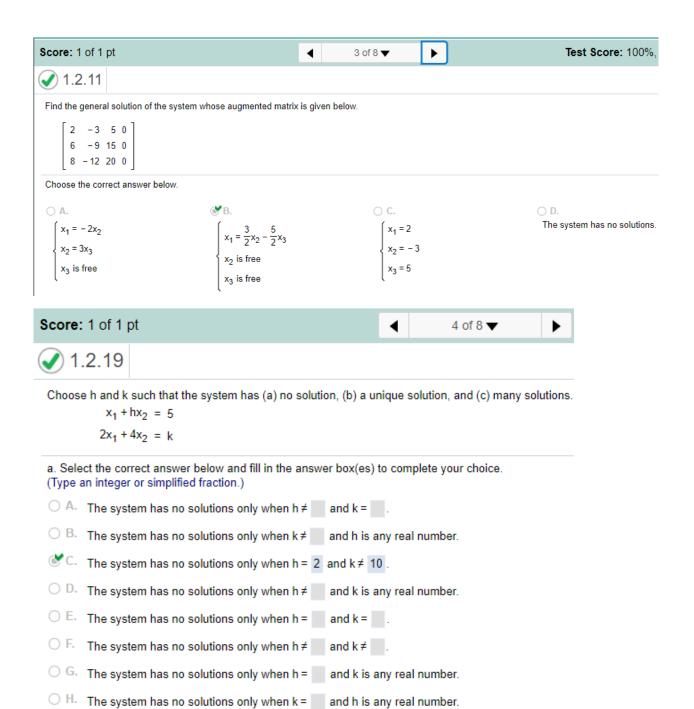
 2 4 6 -18
 4 6 8 -26

List the pivot columns. Select all that apply.

B. Column 4

C. Column 2

D. Column 3



<ul> <li>b. Select the correct answer below and fill in the answer box(es) to complete your choice.</li> <li>(Type an integer or simplified fraction.)</li> </ul>	
○ A.	The system has a unique solution only when k = and h is any real number.
○ B.	The system has a unique solution only when h = and k≠
○ C.	The system has a unique solution only when $k \neq \square$ and h is any real number.
O D.	The system has a unique solution only when h $\neq$ and k $\neq$ .
<b>ℰ</b> E.	The system has a unique solution only when h ≠ 2 and k is any real number.
○ F.	The system has a unique solution only when h = and k = .
○ <b>G</b> .	The system has a unique solution only when $h \neq and k = and k$
○ H.	The system has a unique solution only when h = and k is any real number.
c. Select the correct answer below and fill in the answer box(es) to complete your choice. (Type an integer or simplified fraction.)	
○ A.	The system has many solutions only when k≠ and h is any real number.
○ B.	The system has many solutions only when h =  and k $ \neq $ .
<b>ℰ</b> C.	The system has many solutions only when h = 2 and k = 10.
○ D.	The system has many solutions only when h $\neq$ and k $\neq$ .
○ E.	The system has many solutions only when h ≠ and k is any real number.
○ F.	The system has many solutions only when h $\neq$ and k = .
○ <b>G</b> .	The system has many solutions only when k = and h is any real number.
○ H.	The system has many solutions only when h = and k is any real number.
Score	: 1 of 1 pt
<b>②</b> 1	.3.17
Let a <sub>1</sub>	$= \begin{bmatrix} 1 \\ 5 \\ -1 \end{bmatrix}, \mathbf{a}_2 = \begin{bmatrix} -7 \\ -31 \\ 3 \end{bmatrix}, \text{ and } \mathbf{b} = \begin{bmatrix} 5 \\ 13 \\ h \end{bmatrix}. \text{ For what value(s) of h is } \mathbf{b} \text{ in the plane spanned by } \mathbf{a}_1 \text{ and } \mathbf{a}_2?$
The v	alue(s) of h is(are) 7. (Use a comma to separate answers as needed.)

## Score: 1 of 1 pt



6 of 8 -





1.3.26

Let 
$$A = \begin{bmatrix} 4 & 6 & 8 \\ -2 & 6 & 5 \\ 2 & 0 & 1 \end{bmatrix}$$
, let  $\mathbf{b} = \begin{bmatrix} 12 \\ 3 \\ 7 \end{bmatrix}$ , and let W be the set of all linear combinations of the columns of A.

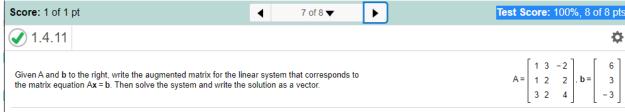
- a. Is b in W?
- b. Show that the second column of A is in W.
- Set up the appropriate augmented matrix for determining if b is in W.

Is b in W?

- No, because the row-reduced form of the augmented matrix has a pivot in the rightmost column.
- B. No, because the row-reduced form of the augmented matrix does not have a pivot in the rightmost column.
- C. Yes, because the row-reduced form of the augmented matrix has a pivot in the rightmost column.
- D. Yes, because the row-reduced form of the augmented matrix does not have a pivot in the rightmost column.
- b. Show that the second column of A is in W.

The second column of A is the vector  $\mathbf{a}_2$ . The vector  $\mathbf{a}_2$  is in W because  $\mathbf{a}_2$  can be written as a linear combination  $\mathbf{c}_1\mathbf{a}_1+\mathbf{c}_2\mathbf{a}_2+\mathbf{c}_3\mathbf{a}_3$  where c1, c2, and c3 are scalars.

Thus, the second column of A is in W because  $a_2 = 0$   $a_1 + 1$   $a_2 + 0$   $a_3$ . (Simplify your answers.)



Write the augmented matrix for the linear system that corresponds to the matrix equation Ax = b. Select the correct choice below and fill in any answer boxes within



Solve the system and write the solution as a vector. Select the correct choice below and fill in any answer boxes within your choice.

$$A = \begin{bmatrix} -3 \\ 3 \\ 0 \end{bmatrix}$$
  $B = \begin{bmatrix} -3 \\ -3 \\ 0 \end{bmatrix}$ 





1.4.18

Do the columns of A span  $\mathbb{R}^4$ ? Does the equation Ax = b have a solution for each b in  $\mathbb{R}^4$ ?

$$A = \begin{bmatrix} 2 & 4 & -2 & 0 \\ 1 & 0 & -3 & 4 \\ 2 & 3 & -3 & 2 \\ -3 & -8 & 1 & 1 \end{bmatrix}$$

Do the columns of A span R<sup>4</sup>? Select the correct choice below and fill in the answer box to complete your choice. (Type an integer or decimal for each matrix element.)

A. Yes, because the reduced row echelon form of A is

$$^{\bullet}$$
 B. No, because the reduced row echelon form of A is 
$$\begin{bmatrix} 1 & 0 & -3 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix} .$$

Does the equation Ax = b have a solution for each b in  $\mathbb{R}^4$ ?

- O A. Yes, because A does not have a pivot position in every row.
- O B. Yes, because the columns of A span R4.
- O. No, because A has a pivot position in every row.
- <sup>™</sup>D. No, because the columns of A do not span R<sup>4</sup>.