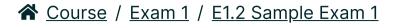


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(1)



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**■** Calculator

1. Let  $L_A: \mathbb{R}^3 \to \mathbb{R}^2$  and  $L_B: \mathbb{R}^3 \to \mathbb{R}^3$  be linear transformations with

$$L_B\left(\begin{pmatrix}1\\0\\0\end{pmatrix}\right) = \begin{pmatrix}3\\1\\0\end{pmatrix}, L_B\left(\begin{pmatrix}0\\1\\0\end{pmatrix}\right) = \begin{pmatrix}-2\\-1\\1\end{pmatrix}, L_B\left(\begin{pmatrix}0\\0\\1\end{pmatrix}\right) = \begin{pmatrix}0\\1\\2\end{pmatrix}$$

and

$$L_A\left(\begin{pmatrix} 3\\1\\0 \end{pmatrix}\right) = \begin{pmatrix} 2\\1 \end{pmatrix}, L_A\left(\begin{pmatrix} -2\\-1\\1 \end{pmatrix}\right) = \begin{pmatrix} 0\\1 \end{pmatrix}, L_A\left(\begin{pmatrix} 0\\1\\2 \end{pmatrix}\right) = \begin{pmatrix} 1\\0 \end{pmatrix}$$

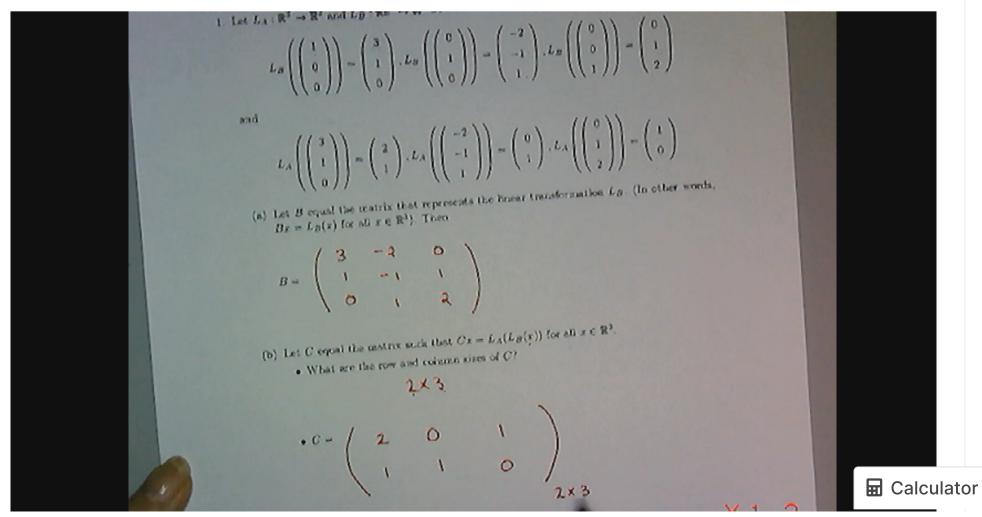
(a) Let B equal the matrix that represents the linear transformation  $L_B$ . (In other words,  $Bx = L_B(x)$  for all  $x \in \mathbb{R}^3$ ). Then

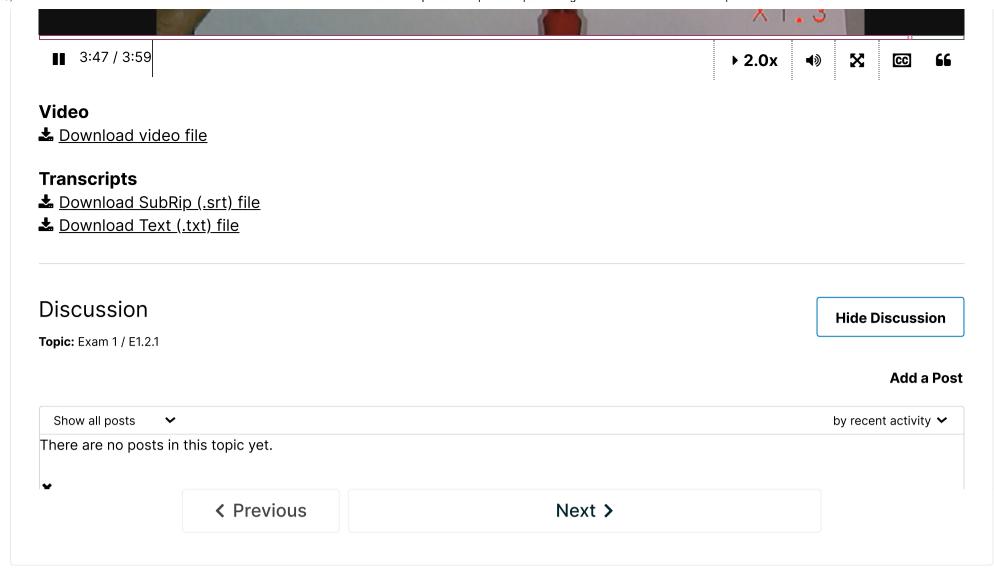
B =

- (b) Let C equal the matrix such that  $Cx = L_A(L_B(x))$  for all  $x \in \mathbb{R}^3$ .
  - What are the row and column sizes of C?
  - Then

C =

## **Answer Video**





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