



Started on	Wednesday, 14 February 2024, 1:34 PM
State	Finished
Completed on	Wednesday, 14 February 2024, 1:47 PM
Time taken	12 mins 54 secs
Grade	5.00 out of 5.00 (100%)

QUESTION 1

Correct

Mark 1.00 out of

1.00

Del menú desplegable, seleccione la opción que mejor describa cada una de las matrices dadas.

La matriz $\begin{bmatrix} 2i & 0 \\ 0 & -2i \end{bmatrix}$ es una matriz ✓ .

La matriz $\begin{bmatrix} \frac{i}{\sqrt{2}} & -\frac{i}{\sqrt{2}} \\ \frac{i}{\sqrt{2}} & \frac{i}{\sqrt{2}} \end{bmatrix}$ es una matriz ✓ .

La matriz $\begin{bmatrix} -1 & -i \\ i & 1 \end{bmatrix}$ es una matriz ✓ .

La matriz de Hadamard $\begin{bmatrix} \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \end{bmatrix}$ es una matriz ✓ .

Your answer is correct.

QUESTION 2

Correct

Mark 1.00 out of

1.00

Si A es una **matriz hermitiana**, entonces todos sus valores propios son números reales.

Select one:

☒ True ✓☐ False

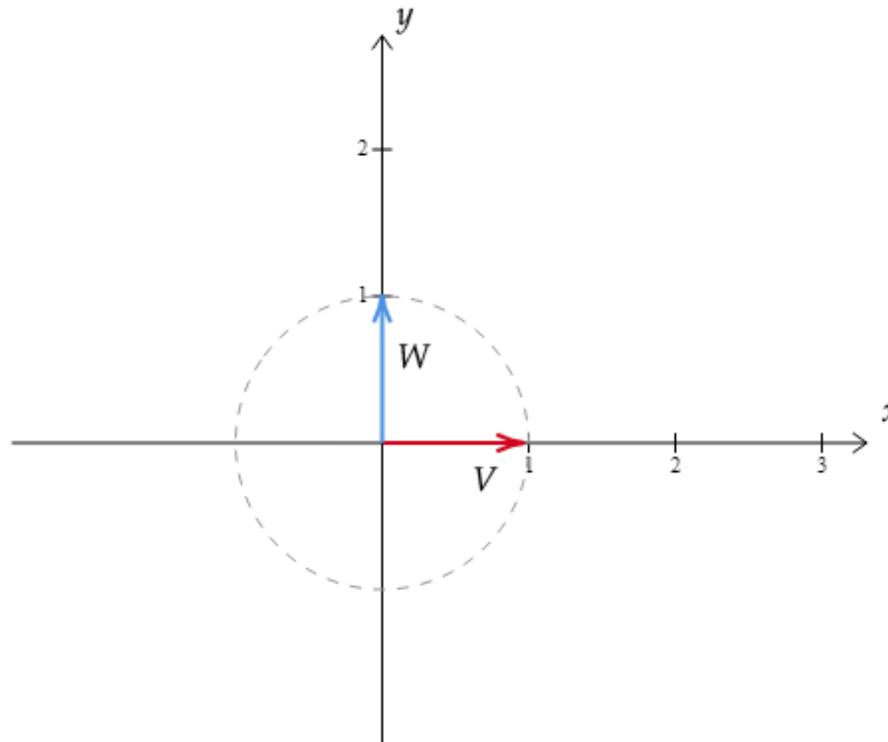
QUESTION 3

Correct

Mark 1.00 out of

1.00

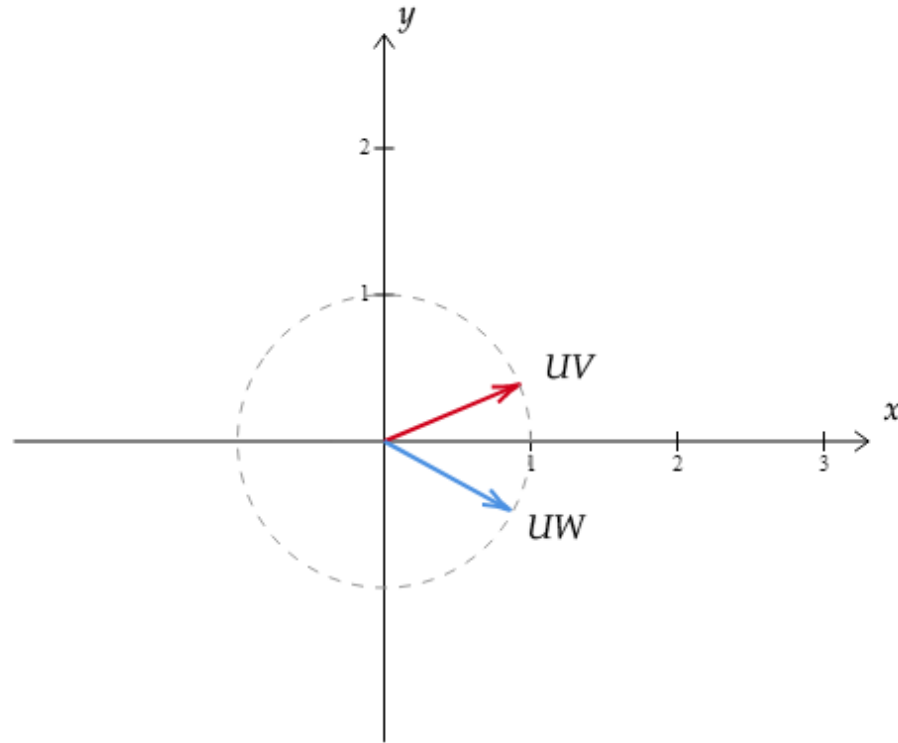
Sea U una matriz unitaria. Considere los vectores V y W como se muestran en la siguiente figura:



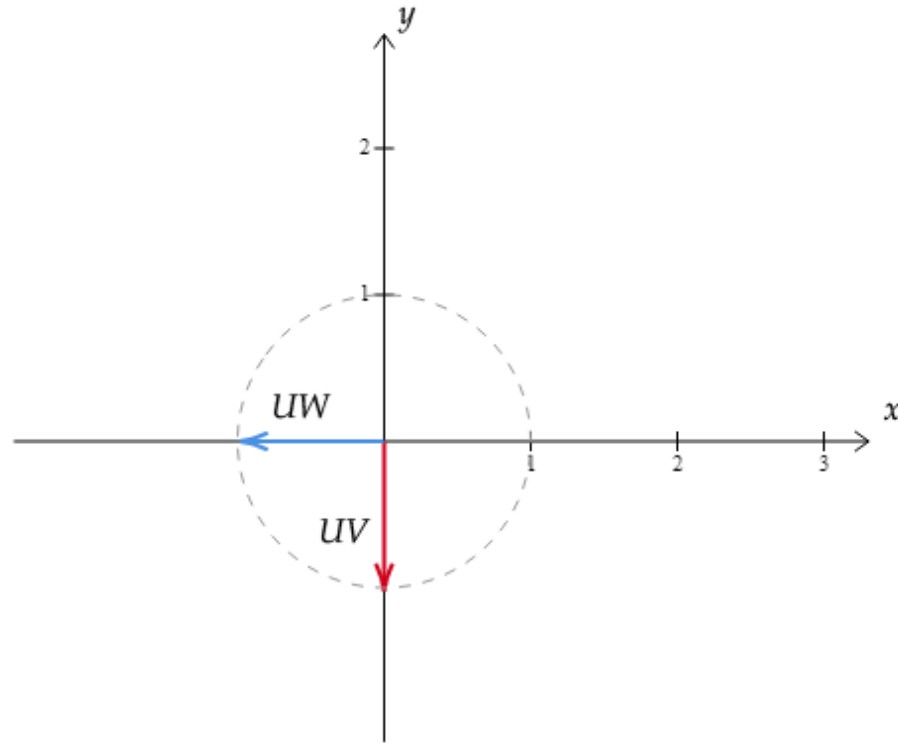
Marque la opción que mejor describa la acción de la matriz unitaria U sobre los vectores V y W .

Select one:

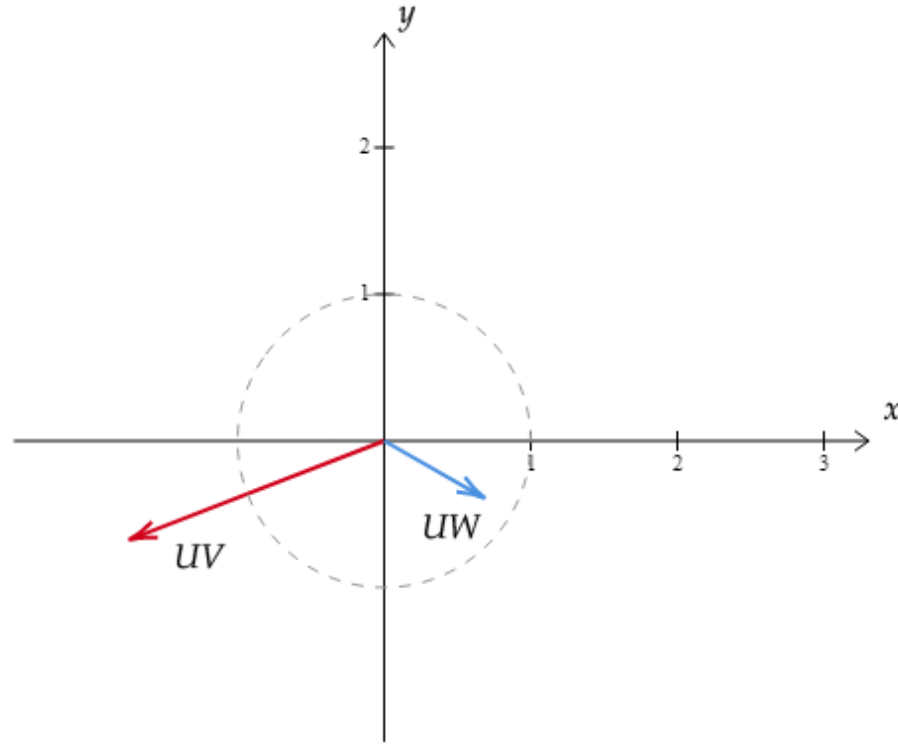
☐ a.



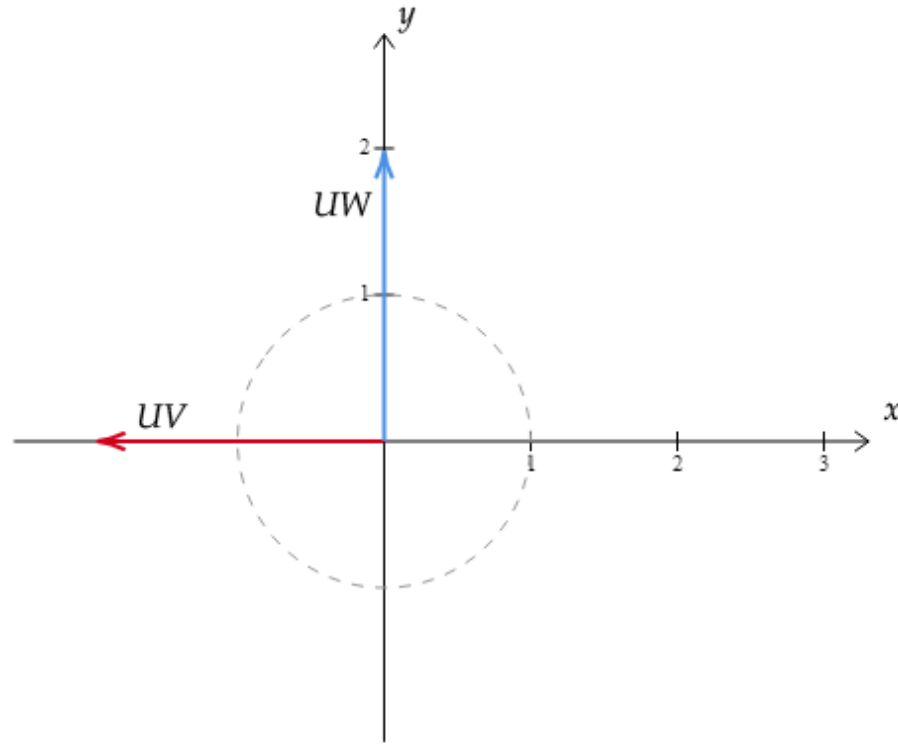
☒ b.



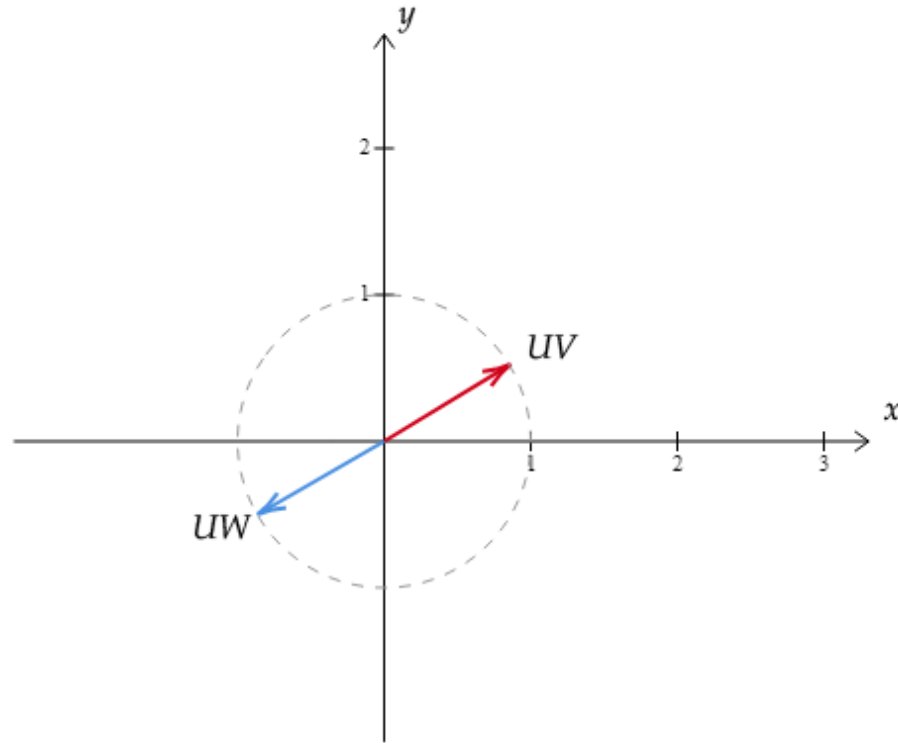
☐ c.



☐ d.



☐ e.



Your answer is correct.

QUESTION 4

Correct

Mark 1.00 out of

1.00

Considere el vector:

$$V = \begin{bmatrix} -1 \\ 2 \\ 5 \end{bmatrix} \otimes \begin{bmatrix} 4 \\ -3 \end{bmatrix}$$

Si $V = [c_0, c_1, c_2, \dots, c_5]^T$, escriba en la casilla el valor de c_2 :

Answer:



QUESTION 5

Correct

Mark 1.00 out of
1.00

Seleccione la matriz que sea igual a la siguiente expresión, correspondiente al **producto tensorial** de las matrices indicadas:

$$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \otimes \begin{bmatrix} \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \end{bmatrix}$$

Select one:

☐ a.
$$\begin{bmatrix} 0 & \frac{1}{\sqrt{2}} & 0 & \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & 0 & \frac{1}{\sqrt{2}} & 0 \\ 0 & \frac{1}{\sqrt{2}} & 0 & -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & 0 & -\frac{1}{\sqrt{2}} & 0 \end{bmatrix}$$

☐ b.
$$\begin{bmatrix} \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} & 0 & 0 \\ \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} & 0 & 0 \\ 0 & 0 & \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \\ 0 & 0 & \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \end{bmatrix}$$

- ☐ c.
$$\begin{bmatrix} \frac{1}{\sqrt{2}} & 0 & \frac{1}{\sqrt{2}} & 0 \\ 0 & \frac{1}{\sqrt{2}} & 0 & \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & 0 & -\frac{1}{\sqrt{2}} & 0 \\ 0 & \frac{1}{\sqrt{2}} & 0 & -\frac{1}{\sqrt{2}} \end{bmatrix}$$
- ☒ d.
$$\begin{bmatrix} 0 & 0 & \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \\ 0 & 0 & \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} & 0 & 0 \\ \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} & 0 & 0 \end{bmatrix}$$
 ✓

Your answer is correct.