¡Felicitaciones! ¡Aprobaste!

Calificación recibida 80 %

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Para Aprobar 60 % o más

Ir al siguiente elemento

1. Identify the two-by-two matrix with matrix elements $a_{ij} = ij$. **1 / 1 punto**

- ○ $\begin{pmatrix} 1 & 4 \\ 4 & 2 \end{pmatrix}$
- ○ $\begin{pmatrix} 2 & 1 \\ 1 & 4 \end{pmatrix}$
- ◉ $\begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}$
- ○ $\begin{pmatrix} 4 & 2 \\ 2 & 1 \end{pmatrix}$

Correcto

2. The matrix product $\begin{pmatrix} 1 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 5 & 3 \\ 3 & 2 \end{pmatrix}$ is equal to **1 / 1 punto**

- ○ $\begin{pmatrix} 5 & 3 \\ 8 & 5 \end{pmatrix}$
- ○ $\begin{pmatrix} 5 & 8 \\ 3 & 5 \end{pmatrix}$
- ○ $\begin{pmatrix} 8 & 3 \\ 3 & 5 \end{pmatrix}$
- ◉ $\begin{pmatrix} 8 & 5 \\ 5 & 3 \end{pmatrix}$

Correcto

3. Let A be a lower triangular matrix with elements a_{ij}. Then $a_{ij} = 0$ when

1 / 1 punto

- ○ $i \geq j$
- ○ $i \leq j$
- ○ $i > j$
- ◉ $i < j$

Correcto

4. Let A, B, and C be n-by-n invertible matrices. Then $(\mathrm{ABC})^{-1}$ is equal to

1 / 1 punto

- ○ $\mathrm{A}^{-1}\mathrm{B}^{-1}\mathrm{C}^{-1}$
- ○ $\mathrm{A}^{-1}\mathrm{C}^{-1}\mathrm{B}^{-1}$
- ◉ $\mathrm{C}^{-1}\mathrm{B}^{-1}\mathrm{A}^{-1}$
- ○ $\mathrm{C}^{-1}\mathrm{A}^{-1}\mathrm{B}^{-1}$

Correcto

5. Which matrix is skew symmetric?

1 / 1 punto

- ◉ $\mathrm{A} - \mathrm{A}^{\mathrm{T}}$
- ○ $\mathrm{A} + \mathrm{A}^{\mathrm{T}}$
- ○ $\mathrm{A}\mathrm{A}^{\mathrm{T}}$
- ○ $\mathrm{A}^{\mathrm{T}}\mathrm{A}$

Correcto

6. Which matrix is the inverse of $\begin{pmatrix} 1 & 2 \\ 2 & 2 \end{pmatrix}$?

1 / 1 punto

- (●) $\frac{1}{2}\begin{pmatrix} -2 & 2 \\ 2 & -1 \end{pmatrix}$
- ( ) $\frac{1}{2}\begin{pmatrix} 2 & -2 \\ -2 & 1 \end{pmatrix}$
- ( ) $\frac{1}{2}\begin{pmatrix} 2 & -2 \\ 2 & 1 \end{pmatrix}$
- ( ) $\frac{1}{2}\begin{pmatrix} -2 & 2 \\ -1 & 2 \end{pmatrix}$

Correcto

7. Which matrix is not orthogonal?

1 / 1 punto

- ( ) $\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$
- (●) $\begin{pmatrix} 1 & 0 & 0 \\ 0 & \sqrt{2}/2 & -\sqrt{2}/2 \\ 0 & -\sqrt{2}/2 & \sqrt{2}/2 \end{pmatrix}$
- ( ) $\begin{pmatrix} 1 & 0 & 0 \\ 0 & \sqrt{2}/2 & -\sqrt{2}/2 \\ 0 & \sqrt{2}/2 & \sqrt{2}/2 \end{pmatrix}$
- ( ) $\begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$

Correcto

8. Which matrix, when placed to the left of another matrix to multiply, permutes rows two and three of the other matrix? **0 / 1 punto**

- (●) $\begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$
- ( ) $\begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}$
- ( ) $\begin{pmatrix} 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{pmatrix}$
- ( ) $\begin{pmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{pmatrix}$

⊗ **Incorrecto**
Review Permutation Matrices and associated practice problems.

9. A matrix raised to the $\bar{5}$th power is the matrix multiplied by itself five times, and the trace of a matrix is the sum of its diagonal elements. What is the trace of **1 / 1 punto**

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 0 & 1 & 2 & 3 & 4 & 5 \\ 0 & 0 & 1 & 2 & 3 & 4 \\ 0 & 0 & 0 & 1 & 2 & 3 \\ 0 & 0 & 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{pmatrix}^{5} ?$$

- (●) 6
- ( ) 12
- ( ) 18
- ( ) 24

✓ **Correcto**

10. Let $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ and write A as the sum of a symmetric and skew-symmetric matrix. The skew-symmetric matrix is equal to

0 / 1 punto

- (●) $\frac{1}{2}\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$
- ( ) $\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$
- ( ) $\frac{1}{2}\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$
- ( ) $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$

⊗ **Incorrecto**

Review Transpose Matrix and associated practice problems.