

2. Sean A , B y C matrices $n \times n$, tales que $\det A = -1$, $\det B = 2$ y $\det C = 3$. Calcular $\det(A^2 B C^T B^{-1})$ y $\det(B^2 C^{-1} A B^{-1} C^T)$.

$$\det(A^2 B C^T B^{-1}) \stackrel{\textcircled{I}}{=} \stackrel{\textcircled{II}}{\det(A^2)} \cdot \det(B) \cdot \stackrel{\textcircled{III}}{\det(C^T)} \cdot \stackrel{\textcircled{II}}{\det(B^{-1})} = 1 \cdot 2 \cdot 3 \cdot \frac{1}{2} = 3$$

$$\det(B^2 C^{-1} A B^{-1} C^T) = 4 \cdot \frac{1}{3} \cdot (-1) \cdot \frac{1}{2} \cdot 3 = -\frac{12}{6} = -2$$

① Por teorema 2.8.9, sean $A, B \in M_n(\mathbb{K})$, $\det(AB) = \det(A)\det(B)$

② Sea $A \in M_n(\mathbb{K})$, $\det(A^2) = \det(A)^2$

③ Por teorema 2.8.14, sea $A \in M_n(\mathbb{K})$, $\det(A) = \det(A^T)$