2019/10/17

2×2 Matrix (Determinant)

$$\det\left(\begin{bmatrix} a & b \\ c & d \end{bmatrix}\right) = ad - bc$$

3×3 Matrix (Determinant)

$$\det\left(\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}\right) = aei + bfg + cdh - ceg - bdi - afh$$

Determinant's features

① $\det(A^T) = \det(A)$

② $\det(I) = 1$

③ $\det(AB) = \det(A) \cdot \det(B)$

④ $A^{-1}A = AA^{-1} = I$

⑤ $\det(A^{-1}) = \frac{1}{\det(A)}$

$\det(A)\det(A^{-1}) = \det(I) = 1$

Problem

1) Find whether the below matrix is a postive-definit or semi-positive

2) Find trace and determinant.

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