Let $A = \begin{bmatrix} 3 & 0 & -2 & 4 \\ 1 & 2 & 0 & -3 \\ -2 & 1 & 3 & -2 \\ 3 & 2 & 1 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 2 & 1 & -2 \\ 1 & 2 & 0 & 3 \\ 0 & 1 & 4 & 5 \\ 1 & 3 & 1 & 0 \end{bmatrix}$

1. Compute $\det(A)$, $\det(B)$, $\det(AB)$ and $\det(BA)$
   What property of determinants do your calculations demonstrate?

2. Calculate $\det(A^T)$ and $\det(B^T)$
   What property of determinants do your calculations demonstrate?