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

1. Find $\det(A)$ by expanding along the first row

2. Find $\det(A)$ by expanding along the second column

3. Find $\det(B)$. You can pick the row or column to expand along

4. Compute $\det(AB)$ and $\det(BA)$
   What property of determinants do your calculations demonstrate?

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