2. (10 points) Let A and B be $n \times n$ matrices. Prove that if either $Ker\,A$ or $Ker\,B$ is non-trivial, then $Ker\,AB$ is also non-trivial.

Since $\det AB = \det A \det B$ ~~and if $\det A = $ then A is~~ non-trivial

if one of $\det A$ or $\det B$ is zero that makes $\det AB$ to ⓞ zero

since $\det AB = \det A \det B$

if determinant is 0 then it is non-trivial.