

# properties of the determinant

Let  $A$  and  $B$  be  $n \times n$  matrices and let  $k$  be a scalar

- $\det(kA) = k^n \cdot \det(A)$
- $\det(A^T) = \det(A)$
- $\det(AB) = \det(A)\det(B)$
- If  $A$  is invertible then

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

- A matrix  $A$  is invertible if and only if  $\det(A) \neq 0$
- A square matrix that has  $\det(A) = 0$  is called **singular** and is not invertible

inverse of a matrix