#+TITLE Determinants

# 1 | **Determinant** def

Represents the "size" of a matrix (area of parallelogram).

For larger (eg. 3x3) matrices, can wrap rows instead of flipping signs (because swapping columns in 2x2 determinant equals flipping sign).

$$\begin{vmatrix} a & b & c \\ d & e & f \\ g & h & j \end{vmatrix} = a \begin{vmatrix} e & f \\ h & j \end{vmatrix} + b \begin{vmatrix} f & d \\ j & g \end{vmatrix} + c \begin{vmatrix} d & e \\ g & h \end{vmatrix}$$

$$= a \begin{vmatrix} e & f \\ h & j \end{vmatrix} - b \begin{vmatrix} d & f \\ g & j \end{vmatrix} + c \begin{vmatrix} d & e \\ g & h \end{vmatrix}$$

## 1.1 | **Properties**

### 1.1.1 | **Multiplicative**

$$|A||B| = |AB|$$