

Divided second row on -9

Multiply second row by -6 and add to first row. Multiply second row by 23 and add to third row

Divided third row on

Multiply third row by -1 and add to first row. Multiply third row by -1/3 and add to second row

=

**Determinates**

If  $A = \begin{vmatrix} a & b \\ c & d \end{vmatrix}$ , then  $\det A = ad - bc$

**Example**  $A = \begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix}$ , then  $\det A = 10 - (-12) = 22$

If  $A = \begin{vmatrix} a & b & c \\ d & e & f \end{vmatrix}$ , then  $\det A = a(e f - c f) - b(d f - c e) + c(d e - d f)$

**Example**  $A = \begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{vmatrix}$

$$\det A = 1(5 \cdot 6 - 3 \cdot 6) - 2(4 \cdot 6 - 3 \cdot 4) + 3(4 \cdot 5 - 4 \cdot 4) = -69$$

There are simple method for finding determinates of matrix  $\begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} = a(ei - fh) - b(di - fg) + c(dh - eg)$

**Example**  $A = \begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$

$$\det A = 3(2(4) + 5(3)(-1) + 2(4) (2) - ((-1)(2)(2)+2(3)(3)+4(4)(5))= -69$$

## Properties of determinates

$$1) =$$

$$2) =$$

**Example**  $A =$

$$= = 6$$

**Example**  $A =$  ,  $B =$

$$= -2$$
 ,  $= 5$

$$AB =$$

$$= -10 =$$

There is a rule to finding the inverse of matrix

$$A =$$

$$=$$

**Example**  $A =$

= 1, =