GEOMETRIE

$A(x_A, y_A)$, $B(x_B, y_B)$

Distanţa AB = $\sqrt{(x_A - x_B)^2 + (y_A - y_B)^2}$

Ecuaţia dreptei AB : $\frac{x - x_A}{x_B - x_A} = \frac{y - y_A}{y_B - y_A}$

Panta $m_{AB} = \frac{y_B - y_A}{x_B - x_A}$

Ecuaţia dreptei determinată de un punct A şi o pantă d: $y - y_A = m(x - x_A)$

Ecuaţia generală a dreptei d: $ax + by + c = 0$, panta $m = -\frac{a}{b}$

$d_1 \parallel d_2 \iff m_1 = m_2$

$d_1 \perp d_2 \iff m_1 m_2 = -1$

M mijloc $[AB]$ $x_M = \frac{x_A + x_B}{2}$, $y_M = \frac{y_A + y_B}{2}$

Distanţa de la punctul A (x_0, y_0) la dreapta d: $ax + by + c = 0$ este $d(A,d) = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}}$

Centrul de greutate G al triunghiului ABC $x_G = \frac{x_A + x_B + x_C}{3}$, $y_G = \frac{y_A + y_B + y_C}{3}$

$\overrightarrow{GA} + \overrightarrow{GB} + \overrightarrow{GC} = \vec{0}$

ABCD paralelogram $\iff x_A + x_C = x_B + x_D$, $y_A + y_C = y_B + y_D$

$\vec{u} = x\vec{i} + y\vec{j} \implies$ modul $|\vec{u}| = \sqrt{x^2 + y^2}$

$\vec{u}\,\vec{v} = |\vec{u}|\,|\vec{v}| \cos(\vec{u}, \vec{v}) = x_1 x_2 + y_1 y_2$

$\vec{u} \parallel \vec{v}$ sau $\vec{u}, \vec{v}$ coliniari $\iff \frac{x_1}{x_2} = \frac{y_1}{y_2}$

$\vec{u} \perp \vec{v} \iff x_1 x_2 + y_1 y_2 = 0$

$\cos(\vec{u}, \vec{v}) = \frac{x_1 x_2 + y_1 y_2}{\sqrt{x_1^2 + y_1^2}\sqrt{x_2^2 + y_2^2}}$

$\overrightarrow{AB} = (x_B - x_A)\vec{i} + (y_B - y_A)\vec{j}$

A,B,C coliniare $\iff$ AB II AC sau $\exists a \in \mathbb{R}^*$ a.î. $\overrightarrow{AB} = a\,\overrightarrow{AC}$ sau $\Delta = \begin{vmatrix} x_A & y_A & 1 \\ x_B & y_B & 1 \\ x_C & y_C & 1 \end{vmatrix} = 0$

AA', BB', CC' sunt concurente $\iff \frac{AC'}{C'B} \cdot \frac{BA'}{A'C} \cdot \frac{CB'}{B'A} = 1$

$r = \frac{S}{p}$, $p = \frac{a+b+c}{2}$

$S = \frac{bh}{2} = \frac{ab \sin C}{2} = \sqrt{p(p-a)(p-b)(p-c)} = \frac{|\Delta|}{2}$

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$, $R = \frac{abc}{4S}$, $a^2 = b^2 + c^2 - 2bc \cos A$, $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

POLINOAME

T: rest f:g $f = gq + r$, grad r < grad g

T restului $f : (x-a) \implies r = f(a)$

T Bezout $f \vdots (x-a) \iff f(a) = 0$

Schema lui Horner pentru $ax^3+bx^2+cx+d=0$	x^3	x^2	x^1	$x^0=1$
	a	b	c	d
x_1	a	$x_1 a + b$	$x_1(x_1 a + b) + c$	$x_1[x_1(x_1 a + b) + c] + d = r$

Ecuaţie binomă $x^n = a = r(\cos t + i \sin t) \implies x_k = \sqrt[n]{r}\left(\cos\frac{t+2k\pi}{n} + i\sin\frac{t+2k\pi}{n}\right)$, $k = \overline{0, n-1}$

Ecuaţie bipătrată $ax^4 + bx^2 + c = 0$, $x^2 = t, \ldots$

Ecuaţie reciprocă de grad 3 $ax^3 + bx^2 + bx + a = 0$, $x_1 = -1$, Horner

Ecuaţie reciprocă de grad 4 $ax^4 + bx^3 + cx^2 + bx + a = 0 \;/ : x^2 \neq 0$, notăm $x + \frac{1}{x} = t$, $x^2 + \frac{1}{x^2} = t^2 - 2, \ldots$